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RWSP Treatment Plant Policies

RWSP Treatment Plant Policies

A. Explanatory material. The treatment plant policies are intended to guide the county in providing treatment at its existing plants and in expanding treatment capacity through the year 2030. The policies direct that secondary treatment will be provided to all base sanitary flows. The county will investigate possible tertiary treatment with a freshwater outfall to facilitate water reuse. The policies also direct how the county will provide the expanded treatment capacity necessary to handle the projected increases in wastewater flows resulting from population and employment growth. The policies provide for the construction of a new treatment plant (the Brightwater treatment plant) to handle flows in a new north service area, expansion of the south treatment plant to handle additional south and east King County flows and the reservation of capacity at the west treatment plant to handle Seattle flows and CSOs. The potential for expansion at the west and south treatment plants will be retained for unanticipated circumstances such as changes in regulations. The policies address goals for odor control at treatment plants and direct that water reuse is to continue and potentially expand at treatment plants.

Treatment Plant Policies	How implemented in 2004–2006
<p>TPP-1: King County shall provide secondary treatment to all base sanitary flow delivered to its treatment plants. Treatment beyond the secondary level may be provided to meet water quality standards and achieve other goals such as furthering the water reuse program or benefiting species listed under the ESA.</p>	<p>The county's regional treatment plants, West Point and South plants, are activated sludge secondary plants. The Vashon Treatment Plant is an oxidation ditch secondary treatment plant.</p> <p>Some of the secondary effluent at the West Point and South treatment plants undergoes disinfection and advanced treatment to be reused for on-site landscaping and in-plant processes. In addition, some of the reclaimed water produced at South plant is distributed in the summer months off-site for irrigation purposes.</p> <p>In 2006, construction began on the Brightwater Treatment Plant and the Carnation Treatment Plant. Both treatment plants will use membrane bioreactor technology (MBR), which will result in treated wastewater that is seven to ten times cleaner than typical secondary treatment.</p> <p>The Department of Natural Resources and Parks (DNRP) continues to monitor and work with agencies and organizations, such as the Washington State Department of Ecology (Ecology) and the Puget Sound Partnership on issues relating to water quality standards, reclaimed water goals, and activities to benefit species listed under the federal Endangered Species Act.</p>
<p>TPP-2: King County shall provide additional wastewater treatment capacity to serve growing wastewater needs by constructing the Brightwater treatment plant at the Route 9 site north of the city of Woodinville and then expanding the treatment capacity at the south treatment plant. The west treatment plant shall be maintained at its rated capacity of one</p>	<p>Construction on the Brightwater Treatment System began in 2006; the project is on schedule for completion in 2010.</p> <p>A South Plant capacity and re-rating evaluation was completed in 2004. Updated population projections (2003 Puget Sound Regional Council forecast by traffic analysis zone) and a 10 percent water</p>

Treatment Plant Policies	How implemented in 2004–2006
<p>hundred thirty-three mgd. The south treatment plant capacity shall be limited to that needed to serve the eastside and south King County, except for flows from the North Creek Diversion project and the planned six-million-gallon storage tank, or minor rerating to facilitate south or east county growth. The potential for expansion at the west treatment plant and south treatment plant should be retained for unexpected circumstances which shall include, but not be limited to, higher than anticipated population growth, new facilities to implement the CSO reduction program or new regulatory requirements.</p> <p><i>(This policy was amended by Ordinance 15602 in September 2005—replacing “north treatment plant” references to “Brightwater” and adding information about minor re-rating to South Plant.)</i></p>	<p>conservation assumption by 2010 were then applied to update flow projections to South plant. Based on these projections, and available capacity at South plant, taking into account the on-line date for Brightwater, it is projected that South plant will have capacity until 2023, at which point re-rating of unit processes could be implemented to provide additional capacity instead of doing a major expansion at that time. Expansion would then occur in 2029 as originally planned.</p> <p>The county will continue to review future updated population projections and water conservation assumptions. Based on future information, the projected dates for re-rating or expansion of South plant could change.</p>
<p>TPP-3: Any changes in facilities of the west treatment plant shall comply with the terms of the West Point settlement agreement.</p>	<p>The county continues to comply with the West Point Settlement Agreement.</p> <p>A significant provision of the agreement was completed in March 2006, when the King County Council approved Ordinance 15391, authorizing payment of \$5.3 million to the City of Seattle in satisfaction of Section 1(d) of the agreement. This section requires the county to investigate alternative technologies that have the potential to remove digesters from the West Point Treatment Plant site, and if no alternatives could be implemented by December 31, 2005, King County agreed to pay an amount established via the agreement to the City of Seattle for deposit in the city’s Shoreline Park Improvement Fund. <i>(See Chapter 2 for more details.)</i></p>
<p>TPP-4: King County’s goal is to prevent and control nuisance odor occurrences at all treatment plants and associated conveyance facilities and will carry out an odor prevention program that goes beyond traditional odor control. To achieve these goals, the following policies shall be implemented:</p> <p>1. Existing treatment facilities shall be retrofit in a phased manner up to the High/Existing Plant Retrofit odor prevention level as defined in Table 1 of Attachment A to Ordinance 14712, the odor prevention policy recommendations dated March 18, 2003. This level reflects what is currently defined as the best in the country for retrofit treatment facilities of a similar size. Odor prevention systems will be employed as required to meet the goal of preventing and controlling nuisance</p>	<p>TPP-4.1: The Wastewater Treatment Division (WTD) is undertaking the following phased improvements at West Point and South treatment plants:</p> <ul style="list-style-type: none"> • Changes to the division channel ventilation system at West Point were completed in 2005. Modifications to the odor scrubber system were completed in early 2007. WTD will evaluate the effects of these improvements through 2008 to determine if they meet the odor control goal for existing facilities. • At South Treatment Plant, the final design of covers for each first pass of the four aeration basins and for the return activated sludge channel was completed in 2005. Installation of the covers began in 2006 and is expected to be completed by the end of 2007.

Treatment Plant Policies	How implemented in 2004–2006
<p>odor occurrences;</p> <p>2. Existing conveyance facilities that pose nuisance odor problems shall be retrofitted with odor prevention systems as soon as such odors occur, subject to technical and financial feasibility. All other existing conveyance facilities shall be retrofitted with odor control systems during the next facility upgrade;</p> <p>3. The executive shall phase odor prevention systems implementing the tasks that generate the greatest improvements first, balancing benefit gained with cost, and report to the council on the status of the odor prevention program in the annual RWSP report as outlined in K.C.C. 28.86.165;</p> <p><i>(sub-section 3 was amended by Ordinance 15384, which directed the executive to include the report on the odor prevention program in RWSP annual reports)</i></p> <p>4. New regional treatment facilities shall be constructed with odor control systems that are designed to meet the High/New Plant odor prevention level as defined in Table 1 of Attachment A to Ordinance 14712, the odor prevention policy recommendations dated March 18, 2003. This level reflects what is currently defined as the best in the country for new treatment facilities of a similar size;</p> <p>5. New conveyance facilities serving these new regional treatment facilities shall also be constructed with odor control systems as an integral part of their design;</p> <p>6. Design standards will be developed and maintained for odor control systems to meet the county's odor prevention and control goals;</p> <p>7. A comprehensive odor control and prevention monitoring program for the county's wastewater treatment and conveyance facilities will be developed. This program shall include the use of near facility neighbor surveys and tracking of odor complaints and responses to complaints and shall consider development of an odor prevention benchmarking and audit program with peer utilities; and</p> <p>8. New odor prevention and measurement technologies will be assessed and methods for pilot testing new technologies identified when determined by the executive to be necessary and appropriate for achieving the goals of this policy</p>	<p>TPP-4.2: Table 2.1 in Chapter 2 lists the improvements WTD is undertaking in the county's existing conveyance facilities.</p> <p>TPP-4.3: The schedule for phased improvements follows this direction. RWSP annual reports include a status of the odor prevention program.</p> <p>TPP-4.4: The Brightwater Treatment Plant's odor control system is being designed to meet the "best in the country for new facilities" level, described in Attachment A to Ordinance 14712. Brightwater's odor control system includes biological, chemical, and carbon odor scrubber stages.</p> <p>TPP-4.5: The Brightwater conveyance system's design includes odor control systems.</p> <p>TPP-4.6: WTD is using the design standard that was developed in 2002 for the county's odor control systems.</p> <p>TPP-4.7: The <i>Odor and H₂S Corrosion Control Plan</i> was completed in late 2006. Surveys of businesses and residents that are near-neighbors of the treatment plants are carried out on an annual basis and provide feedback on odor sources and process improvements that have reduced odor impacts. In addition, WTD has procedures in place to log, investigate, and track all odor complaints. A summary report of yearly odor complaints is provided in RWSP annual reports (see Appendix N).</p> <p>WTD consults with peer utilities on information related to odor control technologies, lessons learned, and information sharing.</p> <p>TPP-4.8: Biological odor scrubbers (bioscrubbers) were pilot tested at the South Treatment Plant in 2005 and resulted in the adoption of the technology for the Brightwater Treatment Plant.</p>

Treatment Plant Policies	How implemented in 2004–2006
<p>TPP-5: King County shall undertake studies to determine whether it is economically and environmentally feasible to discharge reclaimed water to systems such as the Lake Washington and Lake Sammamish watersheds including the Ballard Locks.</p>	<p>The water reuse work plan that was submitted to the King County Council in December 2000 determined such a discharge will not need to be considered for at least 10 years.</p>
<p>TPP-6: The county shall evaluate opportunities in collaboration with adjacent utilities regarding the transfer of flows between the county's treatment facilities and treatment facilities owned and operated by other wastewater utilities in the region. The evaluation shall include, but not be limited to, cost environmental and community impacts, liability, engineering feasibility, flexibility, impacts to contractual and regulatory obligations and consistency with the level of service provided at the county owned and operated facilities.</p> <p><i>(Ordinance 15602 amended this policy to make the policy read clearer, there were no changes to the intent of the policy.)</i></p>	<p>No new opportunities were presented in 2004–2006 regarding transfer of flows between the county's treatment facilities and treatment facilities owned and operated by other wastewater utilities in the region.</p> <p>King County and the City of Edmonds continue to transfer wastewater flows between systems in accordance with their interlocal agreement.</p>
<p>TPP-7: King County may explore the possibility of constructing one or more satellite treatment plants in order to produce reclaimed water. The county may build these plants in cooperation with a local community and provide the community with reclaimed water through a regional water supply agency. In order to ensure integrated water resource planning, in the interim period prior to the development of a regional water supply plan, King County shall consult and coordinate with regional water suppliers to ensure that water reuse decisions are consistent with regional water supply plans. To ensure costs and benefits are shared equally throughout the region, all reclaimed water used in the community shall be distributed through a municipal water supply or regional water supply agency consistent with a regional water supply plan.</p> <p><i>(Ordinance 15602 amended this policy to include the words "a municipal water supply or" in the last sentence.)</i></p>	<p>The King County Council decided to cancel the Sammamish Valley Reclaimed Water Project as part of the 2005 budget ordinance (Ordinance 15083) in favor of developing capabilities of the Brightwater system to produce and distribute reclaimed water, now known as the Brightwater reclaimed water backbone.</p> <p>A regional water supply plan has not been developed. The county continues to consult and coordinate with water utilities on reclaimed water projects and opportunities.</p>
<p>TPP-8: King County shall continue water reuse and explore opportunities for expanded use at existing plants, and shall explore water reuse opportunities at all new treatment facilities.</p>	<p>WTD has been safely using reclaimed water since 1997 at the South and West Point plants.</p> <p>When operational, reclaimed water from the Carnation Treatment Plant will be used to enhance a wetland in the county's Chinook Bend Natural Area.</p> <p>In November 2005, the King County Council approved Phase 1 of the Brightwater reclaimed water pipeline,</p>

Appendix A. Treatment Plant Policies and Implementation in 2004-2006

Treatment Plant Policies	How implemented in 2004–2006
<i>(Ordinance 15602 deleted policies TPP-9 and TPP-10, which referred to the Brightwater siting process. The siting process was completed in December 2003.)</i>	also known as the Brightwater backbone, as part of WTD's 2006 budget. Potential reclaimed water opportunities from this portion of the Brightwater backbone include uses for parks and businesses in Bothell, Woodinville, Redmond, and other cities in the area, as well as farms, parks, and businesses in the Sammamish Valley.

Appendix B

RWSP Conveyance Policies

RWSP Conveyance Policies

A. Explanatory material. The conveyance policies are intended to guide how major improvements to the wastewater conveyance system, including building and upgrading the pipes and pump stations needed to convey wastewater to the Brightwater treatment plant and building the outfall pipe from the Brightwater treatment plant, will be accomplished. The policies also include guidance for other major and minor conveyance improvements to accommodate increased flows in other parts of the service area and to prevent improper discharges from the sanitary system.

The policies also direct the executive to develop and recommend policies to implement equitable regional ownership of the conveyance system.

Conveyance Policies	How implemented in 2004–2006
<p>CP-1: To protect public health and water quality, King County shall plan, design and construct county wastewater facilities to avoid sanitary sewer overflows.</p> <ol style="list-style-type: none"> 1. The twenty-year peak flow storm shall be used as the design standard for the county's separated wastewater system. 2. Parameters developed by the wastewater treatment division in consultation with the metropolitan water pollution abatement advisory committee shall be used to guide project scheduling and prioritization for separated wastewater system projects. 3. The south treatment plant effluent transfer system shall be designed with a five-year design storm standard. When effluent volumes exceed the five-year design standard and exceed the capacity of the south treatment plant effluent transfer system, secondary treated effluent from the south treatment plant will be discharged to the Green/Duwamish river until the flow subsides such that the flow can be discharged through the south treatment plant effluent transfer system. <p><i>(Ordinance 15602 amended this policy—clarifying the definition of the design standard and adding CP-1.2 on the use of parameters developed in consultation with Metropolitan Water Pollution Abatement Advisory Committee)</i></p>	<p>CP-1.1: The twenty-year peak flow storm is used as the design standard for the county's separated wastewater system.</p> <p>CP-1.2: In 2004, WTD worked in consultation with MWPAAC to develop prioritization criteria, which were used in the process to update the Conveyance System Improvement program. (See Chapter 3 for more information.)</p> <p>CP-1.3: There were no emergency or maintenance discharges from South Plant to the Green/Duwamish River in 2004–2006.</p>
<p>CP-2: King County shall construct the necessary wastewater conveyance facilities, including, but not limited to pipelines, pumps and regulators, to convey wastewater from component agencies to the treatment plants for treatment and to convey treated effluent to water bodies for discharge. Conveyance facilities shall be constructed during the</p>	<p>Conveyance projects are being planned and implemented to meet the 20-year peak flow storm design standard and projected flow increases based on anticipated growth.</p> <p>The conveyance system improvement (CSI) program was updated in 2007. The CSI program update identifies 33 conveyance projects to meet identified</p>

Conveyance Policies	How implemented in 2004–2006
planning period of this plan to ensure that all treatment plants can ultimately operate at their rated capacities. No parallel eastside interceptor shall be constructed. No parallel Kenmore Interceptor shall be constructed.	capacity needs through 2050; 24 of these projects are planned through the RWSP planning horizon of 2030. All 33 projects are in addition to the RWSP projects that are completed or that are in design or construction. Chapter 3 provides information on the CSI program update and on conveyance projects in design or construction in 2004-2006.
CP-3: King County shall periodically evaluate population and employment growth assumptions and development pattern assumptions used to size conveyance facilities to allow for flexibility to convey future flows that may differ from previous estimates.	In preparation of the CSI program update, WTD staff used the population and flow information that was included in the <i>2004 RWSP Update</i> and met with staff from the component agencies to go over the estimates and what they are experiencing to validate the estimates and ensure facilities are planned accordingly. The county will continue to evaluate population, employment, and development growth assumptions based on information gathered from the Puget Sound Regional Council, local jurisdiction's comprehensive plan updates, and discussions with the component agencies.
CP-4: King County shall apply uniform criteria throughout its service area for the financing, development, ownership, operation, maintenance, repair and replacement of all conveyance facilities. The criteria shall include: 1. County ownership and operation of permanent conveyance facilities that serve natural drainage areas of greater than one thousand acres; 2. Conformance to the county's comprehensive water pollution abatement plan and the Regional Wastewater Service Plan as precondition of county ownership; and 3. A financial feasibility threshold governing limitations of the county's financial contribution to: development of a new interceptor or trunk sewer; or acquisition of an interceptor or trunk sewer constructed by a local agency. The threshold, as specified in K.C.C. 28.84.080, shall consider the capital costs that can be supported by the existing customers in the natural drainage area that would be served by the new facility. <i>(CP-4 in Ordinance 13680 directed the executive to prepare and submit to the council recommended policies for achieving uniform financing, construction, operation, maintenance and replacement of all conveyance facilities within its service area. Ordinance 15602, which was adopted by the King County Council in</i>	The following activities regarding pipeline acquisitions took place in 2004 through 2006 in accordance with this policy: <ul style="list-style-type: none">• Acquisition of the Southeast Sammamish Interceptor and flow control structure from the Sammamish Plateau Water and Sewer District• Acquisition of the Juanita Creek Trunk Sewer from Northshore Utility District• Acquisition of the Coal Creek Interceptor Extension from Coal Creek Utility District

Conveyance Policies	How implemented in 2004–2006
<p><i>September 2006, amended CP-4 to meet this requirement.)</i></p> <p>CP-5: King County shall closely integrate water reuse planning and I/I study results with planning for wastewater conveyance and treatment facilities. King County shall consider water conservation and demand management assumptions developed by local utilities for wastewater facility planning.</p> <p><i>(Ordinance 15602 amended CP-5 to clarify that the county consider the assumptions developed by local utilities for wastewater facility planning.)</i></p>	<p>For the CSI program update, the county used a water conservation planning assumption of a 10 percent reduction in per day consumption from the 2000 levels by 2010, with no additional reduction thereafter. This is the same assumption used to update the 1998 RWSP flow projections in the <i>2004 RWSP Update</i>. WTD staff will continue to review and monitor the water conservation assumptions of the City of Seattle and other utilities in the county's wastewater service area. For example, in spring 2007, the City of Seattle revised its water conservation assumptions and is now projecting greater conservation through 2010 and additional conservation between 2010 and 2020. WTD is in the process of analyzing Seattle's revised water conservation assumptions to determine the effect, if any, on future flow projections and facility needs.</p> <p>During the process to update the CSI program, no reclaimed water planning efforts were under way or planned that might affect the flow projections used in updating the CSI program. WTD staff will continue to review component agency comprehensive plans to incorporate any evaluation of reclaimed water opportunities in those plans into wastewater facilities planning.</p> <p>The design and construction of the Brightwater reclaimed water pipeline takes advantage of the opportunity to construct this pipeline in conjunction with the construction of the Brightwater conveyance facilities.</p> <p>The infiltration/inflow (I/I) initial projects will provide more information on the effectiveness of I/I control projects. I/I reduction will be pursued in lieu of a CSI project when the cost of an I/I project is less than the cost of the CSI improvement.</p>
<p><i>(Ordinance 15602 deleted CP-6, which called for a study on the impact of conveyance trenches on groundwater recharge, because the study had been completed.)</i></p>	

Appendix C

RWSP Infiltration and Inflow Policies

RWSP Infiltration and Inflow Policies

A. Explanatory material. The I/I policies are intended to guide the county in working cooperatively with component agencies to reduce the amount of I/I that flows into component agencies' local collection systems, thereby reducing the impact of I/I on the regional system's capacity. This cooperative process will assess levels of I/I in local conveyance systems and construct pilot projects and will evaluate the cost-effectiveness and environmental costs and benefits of local collection system rehabilitation. The executive will develop and recommend long-term measures to reduce existing and future levels of I/I into local collection systems. Incentives for component agencies to meet the adopted target for I/I reduction may include a surcharge.

Infiltration and Inflow Policies	How Implemented in 2004–2006
I/IP-1: King County is committed to controlling I/I within its regional conveyance system and shall rehabilitate portions of its regional conveyance system to reduce I/I whenever the cost of rehabilitation is less than the costs of conveying and treating that flow or when rehabilitation provides significant environmental benefits to water quantity, water quality, stream flows, wetlands or habitat for species listed under the ESA.	<p>Since the adoption of the RWSP, WTD has implemented a regional infiltration/inflow (I/I) control program to reduce the volume of I/I from entering its regional conveyance system. The goal of the I/I control program is to pursue I/I reduction projects when the cost of rehabilitation is less than the costs of conveying and treating that flow. The executive's recommended I/I control program that was approved by the King County Council in May 2006 includes the construction of initial I/I projects to test the cost-effectiveness of I/I reduction on a larger scale. The results of these projects will be incorporated into future wastewater facility planning.</p> <p>All I/I rehabilitation or repair projects are subject to project specific environmental review procedures required under the State Environmental Policy Act and other applicable drainage and erosion control standards. The <i>Alternatives/Options Report</i>, March 2005 provides information on potential environmental benefits or impacts associated with I/I reduction.</p>
I/IP-2: King County shall work cooperatively with component agencies to reduce I/I in local conveyance systems utilizing and evaluating I/I pilot rehabilitation projects, and developing draft local conveyance systems' design guidelines, procedures and policies, including inspection and enforcement standards. Evaluations of the pilot rehabilitation projects and a regional needs assessment of the conveyance system and assessments of I/I levels in each of the local sewer systems will form the basis for identifying and reporting on the options and the associated cost of removing I/I and preventing future increases. The executive shall submit to the council a report on the options, capital costs and environmental costs and benefits including but not limited to those related to water quality, groundwater inception, stream flows and wetlands, and habitat of species listed under	<p>A six-year comprehensive I/I control study, completed in 2005, was carried out in coordination with the component agencies. As a result of this study, the King County Executive forwarded the <i>Executive's Recommended Regional I/I Control Program</i> to the King County Council for approval; the council approved the program in May 2006.</p> <p>The recommended I/I control program reflects the need to reduce I/I by cost-effectively removing enough I/I from the collection system to delay, reduce, or eliminate some otherwise needed CSI projects. The recommendations include identifying cost-effective I/I reduction projects on a project specific basis, rather than on a regional basis or by the need to meet specific I/I reduction targets.</p> <p>The recommended program calls for the selection, implementation, and evaluation of two or three "initial" I/I reduction projects to test the effectiveness of I/I reduction on a larger scale than the pilot projects. In</p>

Infiltration and Inflow Policies	How Implemented in 2004–2006
<p>the ESA. No later than December 31, 2005, utilizing the prior assessments and reports the executive shall recommend target levels for I/I reduction in local collection systems and propose long-term measures to meet the targets. These measures shall include, but not be limited to, establishing new local conveyance systems design standards, implementing an enforcement program, developing an incentive based cost sharing program and establishing a surcharge program. The overall goal for peak I/I reduction in the service area should be thirty percent from the peak twenty-year level identified in the report. The county shall pay one hundred percent of the cost of the assessments and pilot projects.</p> <p><i>(Ordinance 15602 updated this policy to reflect conditions as of January 2005.)</i></p>	<p>summer 2006, WTD worked with the Metropolitan Water Pollution Abatement Advisory Committee's (MWPAAC) Engineering and Planning Subcommittee to develop selection criteria for the initial I/I projects. Based on the criteria, four projects were selected by MWPAAC to move forward into pre-design. Based on the results of this work, WTD will work with MWPAAC to select the 2 to 3 most feasible projects for design and construction.</p> <p>A benefit/cost analysis was completed in November 2005 to determine the feasibility of reducing I/I in the region by 30 percent. The analysis found that costs outweighed benefits by nearly three to one. As a result, one of the program recommendations is that the 30 percent goal articulated in I/IP-2 not be implemented. Instead, cost-effective I/I reduction projects will be identified and implemented on a project-specific basis.</p> <p>After completion of the initial projects, the King County Executive will likely forward policy recommendations to the King County Council regarding long-term I/I reduction and control.</p>
<p>I/IP-3: King County shall consider an I/I surcharge, no later than June 30, 2006, on component agencies that do not meet the adopted target levels for I/I reduction in local collection systems. The I/I surcharge should be specifically designed to ensure the component agencies' compliance with the adopted target levels. King County shall pursue changes to component agency contracts if necessary or implement other strategies in order to levy an I/I surcharge.</p> <p><i>(Ordinance 15602 amended the date in this policy from June 30, 2005 to June 30, 2006.)</i></p>	<p>One of the recommendations included in the <i>Executive's Recommended Regional Infiltration and Inflow Control Program</i> is to not implement a surcharge on local agencies. The county and component agencies found that implementing a surcharge would be costly to administer and would pose difficulties in verifying violations. Investing in actual improvements to the conveyance system was considered a better use of revenues.</p> <p>As noted in I/IP-2, after completion of the initial projects, the executive will likely forward policy recommendations to the King County Council regarding long-term I/I reduction and control.</p>

Appendix D

RWSP Combined Sewer Overflow
Control Policies

RWSP Combined Sewer Overflow Control Policies

A. Explanatory material. The CSO control policies are intended to guide the county in controlling CSO discharges. Highest priority for controlling CSO discharges is directed at those that pose the greatest risk to human health, particularly at bathing beaches, and environmental health, particularly those that threaten species listed under ESA. The county will continue to work with federal, state and local jurisdictions on regulations, permits and programs related to CSOs and stormwater. The county will also continue its development of CSO programs and projects based on assessments of water quality and contaminated sediments.

Combined Sewer Overflow Policies	How Implemented in 2004–2006
CSOCP-1: King County shall plan to control CSO discharges and to work with state and federal agencies to develop cost-effective regulations that protect water quality. King County shall meet the requirements of state and federal regulations and agreements.	<p>The county continues to implement the RWSP CSO Control Program to meet the Washington State Department of Ecology (Ecology) standard of no more than an average of one untreated discharge per year at each CSO location. Highlights in 2004–2006 to achieve this goal include:</p> <ul style="list-style-type: none"> • In 2005, completed construction and began startup of Mercer/Elliott West CSO and Henderson/Norfolk CSO control systems (these projects were under way prior to approval and adoption of RWSP) • Completed CSO Control Program annual reports as required per the NPDES (National Pollutant Discharge Elimination System) permit for the West Point Treatment Plant • In 2005, upgraded the pumping capacity at the Carkeek CSO plant from 8.4 mgd to 9.2 mgd • Submitted the <i>CSO Control Program Review</i> to King County Council in 2006 • Continued investigations to determine if proposed levels of CSO control will be sufficient to meet sediment standards • Continued participation and involvement in the Lower Duwamish Waterway Group Superfund studies <p>In 2007, predesign began on four RWSP CSO control projects: South Magnolia, North Beach, Barton Street and Murray Avenue.</p>
CSOCP-2: King County shall give the highest priority for control to CSO discharges that have the highest potential to impact human health, bathing beaches and/or species listed under ESA.	The current CSO control schedule aligns with the priorities outlined in CSOCP-2. The CSO program review that was submitted to the King County Council in spring 2006 reaffirmed the RWSP priorities of protecting public health, the environment, and endangered species, which shaped the development of the CSO control program.
CSOCP-3: Where King County is responsible for stormwater as a result of a CSO control project, the county shall participate with the City of Seattle in the municipal stormwater	This policy was developed with the Lander and Densmore separated drains in mind. In accordance with memoranda of agreements, King County and the City of Seattle jointly manage stormwater discharges

Appendix D. Combined Sewer Overflow Policies and Implementation in 2004-2006

Combined Sewer Overflow Policies	How Implemented in 2004–2006
national pollutant discharge elimination system permit application process.	<p>in the Lander and Densmore drainage basins that occur as the result of county sewer separation projects. In addition, the county is a co-permittee with the City of Seattle for the Densmore NPDES municipal stormwater permit.</p> <p>The county and city continue to discuss how to address stormwater prevention and enforcement needs.</p>
CSOCP-4: Although King County's wastewater collection system is impacted by the intrusion of clean stormwater, conveyance and treatment facilities shall not be designed for the interception, collection and treatment of clean stormwater.	The county remains committed to not building facilities to collect or treat new separated stormwater.
CSOCP-5: King County shall accept stormwater runoff from industrial sources and shall establish a fee to capture the cost of transporting and treating this stormwater. Specific authorization for such discharge is required.	WTD's Industrial Waste Program coordinates the approvals of and cost recovery for such discharges.
CSOCP-6: King County, in conjunction with the city of Seattle, shall implement stormwater management programs in a cooperative manner that results in a coordinated joint effort and avoids duplicative or conflicting programs.	To prevent duplication and conflicts, the county and Seattle coordinate on their stormwater and wastewater management programs. In areas served by combined sewers, the city manages stormwater before it enters the county sewers; the county manages the stormwater after it enters the county sewers. The county is responsible for the stormwater that results from county sewer separation projects. In areas served by separated sewers, the city manages most of the stormwater. As mentioned in CSOCP-3, the county and city are working together and coordinating on source control inspections in the Lower Duwamish Basin.
<p>CSOCP-7: King County shall implement its long-range sediment management strategy to address its portion of responsibility for contaminated sediment locations associated with county CSOs and other facilities and properties. Where applicable, the county shall implement and cost share sediment remediation activities in partnership with other public and private parties, including the county's current agreement with the Lower Duwamish Waterway Group, the Department of Ecology and the Environmental Protection Agency, under the federal Comprehensive Environmental Response, Compensation and Liability Act.</p> <p><i>(Ordinance 15602 amended CSOCP-7 to reflect that a sediment strategy has been developed and is in place.)</i></p>	<p>The county continues to work to improve water quality in the Lower Duwamish Waterway through actions such as reducing CSOs, restoring habitats, capping and cleaning up sediments, and controlling toxicants from industries and stormwater runoff. WTD is partnering with the City of Seattle, the Port of Seattle, and the Boeing Company under a consent agreement with EPA and Ecology to prepare a remedial investigation and feasibility study for the Lower Duwamish Waterway Superfund Site. The remedial investigation, which defines the extent and inherent risks of contamination, will be ready for public review in autumn 2007. The feasibility study, which will identify cleanup alternatives, is scheduled to be completed in 2009.</p> <p>The county is participating in two early action sites—the Diagonal/Duwamish CSO/Storm Drain and Slip 4 CSO. The cleanup at Diagonal/Duwamish was</p>

Combined Sewer Overflow Policies	How Implemented in 2004–2006
<p>CSOCP-8: King County shall assess CSO control projects, priorities and opportunities using the most current studies available, for each CSO Control Plan Update as required by the Department of Ecology in the NPDES permit renewal process, which is approximately every five to seven years. Before completion of an NPDES required CSO Control Plan Update, the executive shall submit a CSO program review to the council and RWQC. Based on its consideration of the CSO program review, the RWQC may make recommendations for modifying or amending the CSO program to the council.</p> <p><i>(Ordinance 15602 updated this policy to reflect current information.)</i></p>	<p>completed in February 2004. Follow-up work was completed at the site in February 2005, and monitoring of these actions is providing critical information on cleanup alternatives for the Superfund site.</p> <p>In 2006, EPA approved a cleanup plan for Slip 4 CSO sediments. Sediments with the highest contamination will be removed, and the remaining sediments will be capped.</p> <p>Monitoring activities in 2005 showed accumulations of phthalates and some other chemicals in front of the Diagonal/Duwamish outfall. This discovery led to formation of the Sediment Phthalate Work Group, composed of representatives from EPA, Ecology, King County, and the Cities of Seattle and Tacoma. The work group is looking at environmental occurrence, sources, risks and receptors, source control and treatment, and regulatory aspects of phthalate sediment contamination.</p> <p>The next CSO control plan update is due to Ecology in 2008—the updates are done in coordination with the NPDES permit renewal for the West Point Treatment Plant. The CSO program review was submitted to the King County Council in 2006, satisfying the requirement for a review to be issued prior to the 2008 CSO Control Plan Update.</p> <p>New technologies that offer some promise for greater cost-effectiveness will be pilot tested between 2007 and 2009. The hydraulic model used to predict the effectiveness of CSO control and to design CSO control projects is being updated and recalibrated. WTD expects the updated model to be ready in 2008. The Lower Duwamish Waterway Source Control Project is pilot testing enhanced source control methods that if effective, could be added to future efforts.</p>
<p>CSOCP-9: Unless specifically approved by the council, no new projects shall be undertaken by the county until the CSO program review has been presented to the council for its consideration. CSO project approval prior to completion of CSO program review (beyond those authorized in this subsection) may be granted based on, but not limited to, the following: availability of grant funding; opportunities for increased cost-effectiveness through joint projects with other agencies; ensuring compliance with new regulatory requirements; or responding to emergency public health situations. The council shall request advice from the RWQC when considering new CSO projects. King County</p>	<p>This policy has been fully implemented. The CSO program review referred to in this policy was submitted to the King County Council in April 2006. No new projects were initiated prior to the submittal of the CSO program review.</p> <p>The projects that were under way as of December 13, 1999 have been completed. The Alki transfer of base flow was completed in 1998 and conversion of the plant to CSO treatment was finished in 2000. The Mercer Elliott/West and the Henderson/Norfolk systems were completed in 2005.</p>

Appendix D. Combined Sewer Overflow Policies and Implementation in 2004-2006

Combined Sewer Overflow Policies	How Implemented in 2004–2006
shall continue implementation of CSO control projects underway as of the effective date of this section, which are the Denny way, Henderson/Martin Luther King, Jr. way/Norfolk, Harbor and Alki CSO treatment plants.	

Appendix E
RWSP Biosolids Policies

RWSP Biosolids Policies

A. Explanatory material. The biosolids policies are intended to guide the county to continue to produce and market class B biosolids. The county will also continue to evaluate alternative technologies so as to produce the highest quality marketable biosolids. This would include technologies that produce class A biosolids.

Biosolids Policies	How Implemented in 2004–2006
BP-1: King County shall strive to achieve beneficial use of wastewater solids. A beneficial use can be any use that proves to be environmentally safe, economically sound and utilizes the advantageous qualities of the material.	One hundred percent of King County's biosolids were used beneficially in agriculture and forestry or as an ingredient in compost. At the West Point and South treatment plants, digester gas was used for energy generation, and at South plant, some of the gas was sold.
BP-2: Biosolids-derived products should be used as a soil amendment in landscaping projects funded by King County.	Specifications for the biosolids compost, GroCo have been added to King County's standard procurement documents for use in bids and contracts. GroCo is also used in the King County Parks greenhouse/nursery program.
BP-3: King County shall consider new and innovative technologies for wastewater solids processing, energy recovery, and beneficial uses brought forward by public or private interests. King County shall seek to advance the beneficial use of wastewater solids, effluent, and methane gas through research and demonstration projects.	<p>WTD continues to evaluate and test new technologies with the capability to advance the beneficial use of biosolids, reclaimed water, and energy resources.</p> <p>Digester gas (methane) is used for energy generation at the plants or is scrubbed and sold. A two-year fuel cell demonstration project at South Plant using digester gas began in February 2004; demonstration testing was completed in 2006.</p> <p>A feasibility study, which has been funded by a state grant, will be prepared in 2007 to identify potential technologies for utilizing the digester gas to generate alternative forms of energy at Brightwater.</p> <p>Resulting from research (2004 to 2006) initiated by University of Washington, the county's biosolids are being used by canola farmers in eastern Washington.</p> <p>In 2006, WTD worked with the University of Washington to estimate carbon sequestration for each biosolids end use: composting, agriculture, and forestry. The university also evaluated the potential for biosolids applications to qualify for carbon credits that could be traded on the Chicago Climate Exchange.</p>
<p>BP-4: King County shall seek to maximize program reliability and minimize risk by one or more of the following:</p> <ol style="list-style-type: none"> 1. maintaining reserve capacity to manage approximately one hundred fifty percent of projected volume of biosolids; 2. considering diverse technologies, end products, and beneficial uses; or 3. pursuing contractual protections including interlocal agreements, where 	<p>WTD recycles 100 percent of its biosolids for use in forestry, on irrigated and dryland crops, and to make compost. The biosolids program has permitted land, primarily in Douglas County to maintain site capacity for 150 percent of annual production. This additional capacity has allowed King County to recycle 100 percent of its biosolids even when one or more of its projects has temporarily reduced capacity.</p> <p>The county continues to evaluate markets that would provide additional site capacity as well as provide environmental benefits and continues to investigate</p>

Appendix E. Biosolids Policies and Implementation in 2004-2006

Biosolids Policies	How Implemented in 2004–2006
appropriate.	technologies that have the potential to cost-effectively produce Class A biosolids.
BP-5: King County shall produce and use biosolids in accordance with federal, state and local regulations.	<p>All regulatory requirements for production and beneficial use of biosolids are being met.</p> <p>In 2004, the county's biosolids program passed an independent audit and was certified into a national program of Environmental Management Systems (EMS). King County was the third wastewater agency in the nation to earn this prestigious certification. The EMS is a program developed by the National Biosolids Partnership to document, monitor and optimize the management of wastewater solids and improve biosolids management programs nationwide.</p>
BP-6: King County shall strive to produce the highest quality biosolids economically and practically achievable and shall continue efforts to reduce trace metals in biosolids consistent with 40 C.F.R. Part 503 pollutant concentration levels (exceptional quality) for individual metals. The county shall continue to provide class B biosolids and also to explore technologies that may enable the county to generate class A biosolids cost-effectively or because they have better marketability. Future decisions about technology, transportation and distribution shall be based on marketability of biosolids products.	<p>WTD's biosolids are routinely monitored for metals, conventional constituents (phosphorous, potassium, and pH), microbes, and organic compounds. WTD's biosolids consistently meet or exceed all federal and state criteria.</p> <p>The county's biosolids metal concentrations are well below the most restrictive federal and state standards. Industrial source control and pretreatment have reduced the amount of metals in biosolids by 70–90 percent since the 1980s.</p> <p>WTD's Industrial Waste Program is evaluating potential sources that contribute Mo (molybdenum) to the wastewater system, such as air conditioning cooling towers. EPA is expected to limit Mo in biosolids for land application in upcoming revisions to federal biosolids rules (40 CFR 503).</p> <p>WTD is participating in a two-year study on the fate and degradation of nonylphenol from land applied biosolids. Nonylphenol is a surfactant found in many household cleaning products and therefore is commonly found in wastewater and biosolids.</p> <p>In 2004–2006, the county conducted investigations into the most appropriate technologies and resultant costs of producing Class A biosolids. The investigation concluded that, at this time, Temperature-Phased Anaerobic Digestion would be the most viable alternative for converting each plant to Class A Biosolids production. Further assessment of costs and benefits will continue in 2007.</p>
BP-7: When biosolids derived products are distributed outside the wastewater service area, the county shall require that local sponsors using the products secure any permits required by the local government body.	The local sponsors outside of the county's wastewater service area who use biosolids are responsible for securing local support and any applicable permits relating to the use of biosolids.
BP-8: King County shall work cooperatively with statewide organizations on biosolids issues.	King County participates in local organizations and is a founding member of the Northwest Biosolids Management Association (NBMA), whose purpose is to share technical knowledge about biosolids

Biosolids Policies	How Implemented in 2004–2006
	<p>management between members, provide opportunities to work with university scientists; local, state, and federal regulators; and the general public.</p> <p>Through the NBMA, WTD works cooperatively with regulatory officials, scientists, and other biosolids managers on regulatory issues, education and training, public information, and research and demonstration. WTD is participating in the Washington State Department of Ecology's biosolids rule revision advisory group and in the NBMA's regulations committee review and comment process.</p> <p>In addition, the county and the University of Washington are evaluating the amount of carbon storage created by each of WTD's current biosolids end uses.</p>
<p>BP-9: King County shall seek to minimize the noise and odor impact associated with processing, transporting and applying of biosolids, consistent with constraints of economic and environmental considerations and giving due regard to neighboring communities.</p>	<p>In 2004–2006, biosolids truck trips at West Point have averaged about four trips per day. At South plant, the trips went from an average of 6.6 trips per day in 2003 to fewer than five trips per day in 2006. The reduction in truck trips at both plants is attributed to the installation of high solids centrifuges. However, odors at application sites have increased due to the use of the centrifuges. WTD is evaluating the options available to reduce these odors. National studies are also under way as other treatment plants are facing similar results from the use of high-solids centrifuges.</p> <p>The West Point Digestion System Improvements project is being planned to increase the stability of the digestion system and decrease the potential for digester upsets. In addition to affecting the quality of the biosolids, these upsets increase odor at the plant. The project will also include modifications to the blending storage tank (Digester 6) to enable its use as an emergency active digester if needed. Predesign will be completed in 2007; final design is expected be complete in 2008.</p>
<p>BP-10: Where cost-effective, King County shall beneficially use methane produced at the treatment plants for energy and other purposes.</p>	<p>King County is beneficially using digester gas, which consists mostly of energy-rich methane gas, at both treatment plants. Both the West Point and South plants recover this gas to generate electricity and heat for treatment plant processes; it is used to power engines, boilers, turbines, and a fuel cell to produce heat and power. Some of the gas produced at South plant is sold to Puget Sound Energy for distribution in its natural gas system.</p>

Appendix F
RWSP Water Reuse Policies

RWSP Water Reuse Policies

A. Explanatory material. The water reuse policies are intended to guide the county in continuing to develop its program to produce reclaimed water. The county will coordinate its program with regional water supply plans and work with state agencies and local jurisdictions on opportunities for water reuse. The county will implement pilot and demonstration projects. Additional projects shall be implemented subject to economic and financial feasibility assessments, including assessing environmental benefits and costs.

The water reuse policies, as in the treatment plant policies, intend that the county continue producing reclaimed water at its treatment plants. The treatment plant policies also address the potential construction of one or more satellite plants. These small plants would provide reclaimed water, with the solids being transferred to the regional plants for processing.

Water Reuse Policies	How Implemented in 2004–2006
<p>WRP-1: King County shall actively pursue the use of reclaimed water while protecting the public health and safety and the environment. The county shall facilitate the development of a water reuse program to help meet the goals of the county to preserve water supplies within the region and to ensure that any reclaimed water reintroduced into the environment will protect the water quality of the receiving water body and the aquatic environment.</p> <p><i>(Ordinance 15602 amended this policy—replacing the word “accelerate” with “facilitate” in the second sentence.)</i></p>	<p>The Wastewater Treatment Division (WTD) has been safely using reclaimed water since 1997 at its regional treatment plants in Seattle and Renton; some of the reclaimed water produced at the South plant is used off-site for irrigation during the summer months. WTD complies with all federal, state, and local regulations governing the application of reclaimed water.</p> <p>In November 2005, the King County Council approved appropriation for the Brightwater reclaimed water backbone, which will be able to provide up to 7 million gallons per day (mgd) of reclaimed water beginning in 2011. WTD has been working with local jurisdictions, water and sewer districts, businesses, and organizations to identify potential reclaimed water customers. Potential reclaimed water opportunities from this segment include uses for parks and businesses in Bothell, Woodinville, Redmond, and other cities in the area, as well as farms, parks, and businesses in the Sammamish Valley. In addition, the county has an agreement with Willows Run Golf Course to supply the golf course with reclaimed water from this portion of the backbone.</p> <p>Reclaimed water will be produced at the Carnation Treatment Plant to enhance a wetland in the Chinook Bend Natural Area.</p>
<p>WRP-2: By December 2007, the King County executive shall prepare for review by council a reclaimed water feasibility study as part of a regional water supply plan which will include a comprehensive financial business plan including tasks and schedule for the development of a water reuse program and a process to coordinate with affected tribal and local governments, the state and area citizens. The reclaimed water feasibility study shall be reviewed by the RWQC. At a minimum the feasibility study shall comply with chapter 90.46</p>	<p>Although a regional water supply plan has not been developed, WTD is committed to the deadline of December 2007 for the reclaimed water feasibility study. In November 2006, WTD began the process to hire consultants and develop a scope, schedule, and budget for the feasibility study based upon this policy.</p>

Appendix F. Water Reuse Policies and Implementation in 2004-2006

Water Reuse Policies	How Implemented in 2004–2006
<p>RCW and include:</p> <ol style="list-style-type: none"> 1. Review of new technologies for feasibility and cost effectiveness, that may be applicable for future wastewater planning; 2. Review of revenue sources other than the wastewater rate for distribution of reused water; 3. Detailed review and an update of a regional market analysis for reused water; 4. Review of possible environmental benefits of reused water; and 5. Review of regional benefits of reused water. <p><i>(Ordinance 15602 amended this policy—replacing the directive for a reclaimed water work program, which the executive submitted to the King County Council in December 2000—with the directive for a reclaimed water feasibility study as part of a regional water supply plan.)</i></p>	
<p>WRP-3: Recycling and reusing reclaimed water shall be investigated as a possible future significant new source of water to enhance or maintain fish runs, supply additional water for the region's nonpotable uses, preserve environmental and aesthetic values and defer the need to develop new potable water supply projects.</p> <p><i>(Ordinance 15602 amended this policy by adding the word "future" before the words "significant new source of water...")</i></p>	<p>Through adoption of the 2005 county budget ordinance, the Sammamish Valley Reclaimed Water Production Facility was cancelled in favor of the production of reclaimed water at Brightwater.</p> <p>Starting in 2011, the reclaimed water backbone will be able to convey Class A reclaimed water produced at the Brightwater Treatment Plant to the Sammamish Valley and to potential customers along the conveyance tunnel. Studies indicate that if self suppliers (those agricultural businesses currently taking water directly from the Sammamish River) were to use reclaimed water instead there would be a significant cooling effect of the river which contains a run of Chinook salmon.</p>
<p>WRP-4: King County's water reuse program and projects shall be coordinated with the regional water supply plans and regional basin plans, in accordance with state and federal standards. The coordination shall be done with the affected water supply purveyors. Water reuse must be coordinated with water supply/resource purveyors to ensure that resources are developed in a manner complementary with each other to allow the most effective management of resources in the county.</p> <p><i>(Ordinance 15602 amended this policy to ensure coordination of reclaimed water projects with affected water supply purveyors.)</i></p>	<p>WTD has been meeting with water supply purveyors to discuss reclaimed water opportunities. Although a regional water supply plan has not been developed, the county remains committed to coordinating with water supply purveyors on reclaimed water projects and related issues.</p>
WRP-5: King County shall implement	As noted in WRP-3, the King County Council

Water Reuse Policies	How Implemented in 2004–2006
<p>nonpotable projects on a case-by-case basis. To evaluate nonpotable projects, King County shall develop criteria which will include, but are not limited to: capital, operation and maintenance costs; cost recovery; potential and proposed uses; rate and capacity charge impacts; environmental benefits; fisheries habitat maintenance and enhancement potential; community and social benefits and impacts; public education opportunities; risk and liability; demonstration of new technologies; and enhancing economic development. A detailed financial analysis of the overall costs and benefits of a water reuse project shall include cost estimates for the capital and operations associated with a project, the anticipated or existing contracts for purchases of reused water, including agricultural and other potential uses, anticipated costs for potable water when the project becomes operational; and estimates regarding recovery of capital costs from new reused water customers versus costs to be assumed by existing ratepayers and new customers paying the capacity charge. Water reuse projects that require major capital funding shall be reviewed by RWQC and approved by the council.</p> <p><i>(Ordinance 15602 amended this policy to further define the criteria to be used to evaluate nonpotable reuse project, the elements to be included in project financial analysis, and to require water reuse projects that require major capital funding be reviewed by RWQC and approved by the King County Council.)</i></p>	<p>cancelled the Sammamish Valley reclaimed water satellite production facility in favor of producing reclaimed water at Brightwater. In 2005, WTD staff briefed the King County Council, RWQC, MWPAAC, and other stakeholders about the plan to distribute reclaimed water to the Sammamish Valley from Brightwater. As a result, the Brightwater reclaimed water backbone was evaluated and approved by the King County Council in November 2005. To date, no other major reclaimed water projects have been proposed. Evaluation of any new major reclaimed water projects will be done in accordance with this policy.</p>
<p>WRP-6: King County shall work with local water purveyors, including when the local purveyors update their water comprehensive plans, to evaluate the opportunities for water reuse within their local service area.</p>	<p>WTD participates in discussions with individual water purveyors, jurisdictions, MWPAAC, and other entities concerning reclaimed water opportunities.</p> <p>The county's Brightwater mitigation agreements with the City of Bothell, City of Kenmore, and the Cross Valley Water District include language about working together to pursue opportunities for using reclaimed water.</p> <p>King County Code 13.24.010 calls for water comprehensive plans to include an evaluation of reclaimed water opportunities as required by RCW 90.46.120 and calls for sewer comprehensive plans to discuss opportunities for reclaimed water as required under RCW 90.48.112. King County's Utilities and Technical Review Committee (UTRC) serves as the technical review body for water and sewer utilities' comprehensive plans.</p>

Water Reuse Policies	How Implemented in 2004–2006
<p>WRP-7: King County shall develop an active water reuse public education and involvement program to correspond with the development of the water reuse program and be coordinated with other water conservation education programs.</p>	<p>King County has developed an active water reuse public education and involvement program. The effort is coordinated with water conservation and other WTD educational programs.</p> <p>In 2004–2006, written materials on reclaimed water and water conservation were developed for a variety of audiences, from large water users to the general public. Information on reclaimed water is included in tours and open houses of the county’s regional treatment plants. Informational displays on reclaimed water are available for public meetings and events.</p> <p>WTD’s reclaimed water and water conservation Web sites are updated on a regular basis.</p>
<p>WRP-8: King County shall utilize a forum or multiple forums to provide opportunities for coordination and communication with the Washington state Departments of Health and Ecology, which have the principal state regulatory roles in the planning, design and construction of reuse facilities. The county shall involve other parties on these forums, including but not limited to, the Corps of Engineers, Washington state Department of Fish and Wildlife, National Marine Fisheries Service, United States Fish and Wildlife Service, regional water suppliers, tribal governments, local water and wastewater districts, cities, local health departments, watershed forums and environmental and community groups.</p>	<p>This process is an ongoing element of the county’s reclaimed water planning. Agencies cited in WRP-8 are regular participants, along with the county, in multiple processes and committees related to water supply and environmental and public health issues. In 2004–2006, efforts included participation in the Normative Flows Studies project, Puget Sound Partnership efforts, Central Puget Sound Water Suppliers Forum, the 2005 King County Climate Change Conference, the regional water supply planning process, and efforts and discussions related to the Brightwater permitting process.</p>
<p>WRP-9: King County shall work, on a case-by-case basis, with the Washington state Departments of Health and Ecology on water reuse projects including, but not limited to, those that are not specifically cited in the 1997 Department of Health and Ecology Water Reclamation and Reuse Standards.</p>	<p>King County works closely with the Washington State Departments of Health and Ecology on the county’s water reuse projects, including reclaimed water production associated with the future Brightwater and Carnation treatment plants. Ecology approved the facilities plan for the Brightwater Treatment Plant in June 2005 and for the Carnation Treatment Plant in October 2005. The <i>Brightwater Reclaimed Water Engineering Report</i> was approved by the Washington State Department of Health (DOH) on October 31, 2006 and by Ecology on November 8, 2006. WTD continues to work with DOH and Ecology to ensure the design and construction of the backbone complies with state standards</p>
<p>WRP-10: King County shall hold and maintain the exclusive right to any reclaimed water generated by the wastewater treatment plants of King County.</p> <p><i>(Ordinance 15602 amended this policy to correct grammatical error.)</i></p>	<p>This policy is in accordance with RCW 90.46.120, which states “The owner of a wastewater treatment facility that is reclaiming water with a permit issued under this chapter has the exclusive right to any reclaimed water generated by the wastewater treatment facility.”</p>
<p>WRP-11: King County’s water reuse program projects shall not impair any existing water</p>	<p>This policy is in accordance with RCW 90.46.130, which states “...facilities that reclaim water under this</p>

Water Reuse Policies	How Implemented in 2004–2006
rights unless compensation or mitigation for such impairment is agreed to by the holder of the affected water rights.	chapter shall not impair any existing water right downstream from any freshwater discharge points of such facilities unless compensation or mitigation for such impairment is agreed to by the holder of the affected water right.”
WRP-12: King County shall retain the flexibility to produce and distribute reclaimed water at all treatment plants including retaining options to add additional levels of treatment.	The county will consider additional reclaimed water opportunities associated with its two regional plants (South plant in Renton, and West Point plant in Seattle). The design and treatment technology at Brightwater and Carnation will provide flexibility for future reclaimed water opportunities.
WRP-13: King County shall continue to evaluate potential funding of pilot-scale and water reuse projects, in whole or in part, from the wastewater utility rate base. <i>(Ordinance 15602 amended this policy by replacing the word “fund” with “evaluate potential funding” and deleted the word “demonstration”, which preceded “water reuse projects”.)</i>	The water reuse technology pilot projects at the West Point plant were funded from the wastewater rate. The Brightwater reclaimed water backbone will be initially financed from the wastewater rate. The county is exploring other financing options for future reclaimed water opportunities, such as user fees, grants, and loans. The reclaimed water feasibility study called for in WRP-2 will include information on revenue sources other than the wastewater rate for distribution of reused water.
WRP-14: King County shall complete an economic and financial feasibility assessment, including environmental benefits, of its water reuse program. The assessment shall include the analysis of marginal costs including stranded costs and benefits to estimate equitable cost splits between participating governmental agencies and utilities. The assessment shall also include a review of existing and planned water and wastewater facilities in an approved plan to ensure that water reuse facilities are justified when any resulting redundant capacity as well as other factors are taken into account.	The feasibility study called for in WRP-2 aligns closely with this policy.
WRP-15: King County should pursue development of a water reuse program to discharge reclaimed water to reduce freshwater consumption used in the operation of the Ballard Locks as a priority water reuse project.	During the development of the water reuse program that was submitted in December 2000, it was determined to defer consideration of this policy for at least ten years. There haven’t been any changes to this assessment since that time.

Appendix G

RWSP Wastewater Services Policies

RWSP Wastewater Service Policies

A. Explanatory material. The wastewater services policies guide the county in both providing wastewater services to its customers and maintaining the wastewater system in a cost-effective, environmentally responsible manner. These policies shall also guide King County's development and operation of community treatment systems.

King County provides wholesale wastewater treatment and disposal service to component agencies. The county's wastewater service area boundary generally coincides with the boundaries of these component agencies, including certain areas in Snohomish county and Pierce county. The county is to provide wastewater services to areas within the respective urban growth boundaries and in rural areas only to protect public health and safety, in conformance with state provisions and local growth management act policies and regulations.

Wastewater Services Policies	How Implemented in 2004–2006
<p>WWSP-1: King County shall provide wastewater services to fulfill the contractual commitments to its component agency customers in a manner that promotes environmental stewardship, recognizes the value of wastewater in the regional water resource system and reflects a wise use of public funds.</p>	<p>King County has long-term agreements to provide sewage disposal and treatment services with 33 local governments and one Indian Tribe.</p> <p>Environmental stewardship is an important component of the county's wastewater treatment service; WTD's mission is to protect public health and enhance the environment by treating and reclaiming water, recycling solids and generating energy. WTD's vision of creating resources from wastewater is carried out in recognition of the overall value of wastewater.</p> <p>WTD provides high quality wastewater treatment in as cost-effective manner as possible. The division regularly evaluates projects in the planning process and design phase to identify potential cost-savings. WTD bonds are highly rated and receive low interest rates.</p>
<p>WWSP-2: King County shall continue to foster tribal relations as appropriate to structure processes for joint water quality stewardship.</p>	<p>WTD regularly works with tribes on its plans and projects. Activities with the tribes during the 2004 to 2006 timeframe include:</p> <ul style="list-style-type: none"> • Entering into a sewage disposal agreement with the Muckleshoot Indian Tribe; the tribe took ownership over a portion of Auburn's sewer service area • Working with the Puyallup Tribe to address shellfish contamination of the Quartermaster Harbor area of Vashon-Maury Island • Working with the Muckleshoot Indian and Suquamish Tribes in the decision process for cleaning up Duwamish River sediments • Carrying out research studies that are part of the Brightwater mitigation agreement with the Suquamish Tribe regarding marine habitat in Puget Sound; the results of these studies will be also be shared with the Tulalip Tribes

Wastewater Services Policies	How Implemented in 2004–2006
	<ul style="list-style-type: none"> • Entering into agreements with the Suquamish Tribe and the Muckleshoot Indian Tribe regarding mitigation for the Brightwater project • Working closely with the Snoqualmie Tribe on the Carnation Treatment Plant and entering into an agreement with the tribe to accelerate the wetland discharge option for the Carnation plant • Reviewing results of Sammamish River monitoring with the Muckleshoot Indian Tribe • Coordinating with the Muckleshoot Indian Tribe to identify and address concerns regarding the design of the Ballard Siphon Repair project.
<p>WWSP-3: King County shall not accept additional wastewater directly from private facilities within the boundaries of a component agency without the prior written consent of such component agency.</p>	<p>WTD has received no such requests from private facilities since the adoption of the RWSP.</p>
<p>WWSP-4: King County's wastewater service area generally has been developed along those boundaries adopted in the original metropolitan Seattle sewerage and drainage survey, substantive portions of which were adopted as the county's comprehensive water pollution abatement plan and amended. King County's wastewater service area consists of the service areas of the component agencies with which a sewage disposal agreement has been established (agreement for sewage disposal, section 2) and the county's service area boundary is the perimeter of these areas. The service area boundary for sewer service provided to Snohomish county and Pierce county shall not exceed each county's urban growth boundary. The service area boundary within King County shall be consistent with countywide planning policy CO-14 and the King County Comprehensive Plan which permit sewer expansion in rural areas and resource lands where needed to address specific health and safety problems. To protect public health and safety, the county may assume in accordance with state procedures, the ownership of existing sewer treatment and conveyance facilities that have been constructed by a sewer district organized under state law.</p>	<p>The county's wastewater service area boundary remains consistent with this policy.</p>
<p>WWSP-5: Extensions of existing conveyance facilities or construction of new conveyance facilities must be consistent with King County's</p>	<p>WTD evaluates its projects during the planning process to ensure consistency with the county's land use plans and policies. WTD maintains and reviews up-to-date</p>

Wastewater Services Policies	How Implemented in 2004–2006
land use plans and policies, and certified by potentially affected land use jurisdictions as consistent with their adopted land use plans and policies.	local capital improvement plans for jurisdictions and sewer districts in the county's wastewater service area and works closely with local jurisdictions through all phases of a project that is planned within their jurisdiction.
WWSP-6: King County shall operate and maintain its facilities to protect public health and the environment, comply with regulations and improve services in a fiscally responsible manner.	<p>WTD's mission is to protect public health and enhance the environment by treating and reclaiming water, recycling solids and generating energy. Extensive resources have been committed to maintaining the integrity of the wastewater system and preventing sanitary sewer overflows (SSOs). The Industrial Waste and Local Hazardous Waste Management programs work to control pollutants at their sources and prevent those pollutants from reaching the county's treatment plants. In 2006, the West Point and South plants received the National Association of Clean Water Agencies (NACWA) Platinum Peak Performance Award for operating five consecutive years with no permit exceptions.</p> <p>The King County Council's review of WTD's programs, priorities, and costs during the annual rate setting process and council's budget process provides additional assurance that WTD is carrying out its programs in a fiscally responsible manner.</p>
WWSP-7: King County shall plan, design and construct wastewater facilities in accordance with standards established by regulatory agencies and manuals of practice for engineering.	<p>WTD designs and constructs its wastewater treatment facilities to ensure the county fully complies with or exceeds regulatory and permit requirements. WTD applies good science and engineering to its planning, design, and construction of facilities and it follows industry-recognized standards. As a result, the county's wastewater system exceeds the reliability standards of most major metropolitan areas and has been able to absorb record storm events in recent years with little effect on public health and safety.</p> <p>To ensure the county is keeping up-to-date with regulations and standards information, WTD participates in national organizations and associations that address issues such as pumping standards, treatment and odor control standards and technologies, and predictive modeling tools. In addition, WTD follows the guidelines in the <i>Criteria for Sewage Works Design</i> manual. The Washington State Department of Ecology prepares this manual, also known as the "Orange Book". It serves as a guide for the design of wastewater collection, treatment, and reclamation systems and addresses requirements that will lead to approvable plans. State code (WAC 173-240-040) requires that sewer plans and specifications are reasonably consistent with the Orange Book.</p>
WWSP-8: King County shall construct, operate and maintain facilities to prevent raw sewage overflows and to contain overflows in the	<p>Implementation of the RWSP ensures that adequate wastewater capacity will be available when needed. The various sections and work units of WTD coordinate</p>

Wastewater Services Policies	How Implemented in 2004–2006
combined collection system. In the event of a raw sewage overflow, the county shall initiate a rapid and coordinated response including notification of public health agencies, the media, the public and the affected jurisdiction. Preserving public health and water quality shall be the highest priority, to be implemented by immediately initiating repairs or constructing temporary diversion systems that return flow back to the wastewater system.	to assess facilities' needs and prioritize projects to prevent overflows. WTD's forecasting and demand-modeling capabilities, in-field flow monitoring, and ongoing facilities' inspection provide essential information to identify and address capacity, operational, and maintenance needs. WTD has established emergency response procedures in the event of sewage overflows.
WWSP-9: To ensure the region's multibillion-dollar investment in wastewater facilities, an asset management program shall be established that provides for appropriate ongoing maintenance and repair of equipment and facilities. The wastewater maintenance budget, staffing levels and priorities shall be developed to reflect the long-term useful life of wastewater facilities as identified by the asset management program. <i>(Ordinance 15602 amended this policy to specify the establishment of an asset management program; prior to being amended, the policy stated that ongoing maintenance and repair of facilities shall be a high priority of King County.)</i>	A formal and detailed asset management program is being developed to optimize the useful life of county wastewater facilities. In 2004, WTD went through a benchmarking process comparing the agency with 22 Australian and New Zealand utilities that are recognized world leaders in the institution of asset management practices. This process helped to identify what is working well in WTD's asset management program and what areas need improvement. A comprehensive asset management strategic plan is under way and anticipated to be complete by the end of 2007; this plan will be updated annually. The plan will include information on best management practices for all assets and refine the long-range capital replacement program to best predict which assets will need to be replaced, when they will need to be replaced, and a corresponding budget.
WWSP-10: The asset management program shall establish a wastewater facilities assets management plan, updated annually, establishing replacement of worn, inefficient and/or depreciated capital assets to ensure continued reliability of the wastewater infrastructure. <i>(Ordinance 15602 amended this policy and replaced the words "King County" at the beginning of the policy with "The asset management program".)</i>	Regularly scheduled condition assessments are performed on the conveyance system and facility structures. Findings and rehabilitation recommendations are reported in a Facilities Inspection Annual Report. Forecasted asset replacement plans for process equipment, facility structures and conveyance system is a major product of the asset management program.
WWSP-11: King County shall design, construct, operate and maintain its facilities to meet or exceed regulatory requirements for air, water and solids emissions as well as to ensure worker, public and system safety.	WTD's treatment plants continue to meet, and in most cases exceed permit requirements. In 2006, the West Point and South plants received the National Association of Clean Water Agencies (NACWA) Platinum Peak Performance Award for operating five consecutive years with no permit exceptions. The Industrial Waste Program permits discharges into the sewer that are not hazardous to workers and cause no environmental harm. In the case of emergencies, WTD has procedures in place to ensure worker, public, and system safety.

Wastewater Services Policies	How Implemented in 2004–2006
<p>WWSP-12: King County shall accept sewage, septage and biosolids from outside its service area provided that it is consistent with the King County Comprehensive Plan or the comprehensive plan of the source jurisdiction, capacity is available and no operating difficulties are created. The county shall establish a rate to recover costs from accepting sewage, septage and biosolids from outside its service area.</p>	<p>Services are monitored for consistency with applicable plans and to ensure they cause no adverse impact to the wastewater system. A separate rate, based on solids content, has been established to cover the costs of processing deliveries of septage and biosolids at the South Treatment Plant.</p>
<p>WWSP-13: King County shall identify the potential for “liability protection” for component agencies for unexpected costs associated with water quality requirements.</p>	<p>This policy was developed in 1999, soon after the Chinook salmon was listed as a threatened species under the Endangered Species Act. There was discussion that if the county were to do a Habitat Conservation Plan (HCP) for the entire wastewater service area, there might be a way for the county’s component agencies to achieve “liability protection” under WTD’s HCP. WTD discontinued the work on the HCP in April 2005 after the first phase was completed (see Chapter 9).</p>
<p>WWSP-14: King County shall continue its long-standing commitment to research and development funding relating to water quality and technologies for the wastewater system.</p>	<p>In the period from 2004 through 2006, the county conducted pilot-scale studies on the membrane bioreactor (MBR) technology being installed in the new Carnation and Brightwater treatment plants. The studies provided valuable information regarding process control, peaking capabilities, process optimization, and nutrient removal. In addition, the MBR studies provided an opportunity for operations and maintenance staff to become familiar with the technology.</p> <p>A 1-megawatt fuel cell demonstration project was initiated at the South Treatment Plant in 2004 and completed in 2006.</p> <p>The county has also begun assessing the presence and fate of endocrine disrupting compounds in wastewater, surface waters and soils as well as the analytical procedures necessary to detect minute quantities of these compounds; this work will continue in 2007.</p>
<p>WWSP-15: King County will consider development and operation of community treatment systems under the following circumstances:</p> <ol style="list-style-type: none"> 1. The systems are necessary to alleviate existing documented public health hazards or water quality impairment; 2. Connections to public sewers tributary to conventional wastewater treatment facilities are not technically or economically feasible; 3. Installation of on-site septic systems is not technically feasible; 4. Properties to be served by said systems are within the jurisdiction and service area of a 	<p>Community treatment service continues to be provided in accordance with this policy. WTD owns and operates the Beulah Park/Cove Treatment Facility on Vashon Island. This facility began operating in November 2001, and received its first State Waste Discharge permit from The Washington State Department of Ecology (Ecology) on October 31, 2005.</p>

Appendix G. Wastewater Services Policies and Implementation in 2004-2006

Wastewater Services Policies	How Implemented in 2004–2006
local government authority authorized to provide sewer service; 5. The local sewer service provider agrees to own and operate the collection system tributary to the community treatment system; 6. Development of the community systems and provision of sewer service are consistent with all applicable utility and land use plans; and Public sewer extensions shall be in compliance with King County Comprehensive Plan Policy F-313 as in effect on March 11, 1999.	

Appendix H

RWSP Water Quality Protection Policies

RWSP Water Quality Protection Policies

A. Explanatory materials. The water quality protection policies are intended to guide King County in identifying and resolving regional water quality issues, protecting public and environmental health and protecting the public's investment in wastewater facilities and water resource management. Research and analysis are required and will be used to evaluate water quality in county streams and other bodies of water within the service district.

Water Quality Protection Policies	How Implemented in 2004–2006
<p>WQPP-1: King County shall participate in identifying and resolving water quality issues pertaining to public health and ecosystem protection in the region to ensure that the public's investment in wastewater facilities and water resource management programs is protected.</p>	<p>King County monitors the waters and sediments near treatment plant and CSO outfalls to ensure compliance with water quality regulations to quickly identify and resolve water quality issues.</p> <p>King County's Trouble Call Program investigates water quality complaints, including wastewater overflows and leaks, in the county's wastewater service area. The program responded to about 110 incidents each year for the years 2004–2006. In 2004 and 2005, nine of the incidents were WTD-related. In 2006, 24 incidents were Wastewater Treatment Division (WTD)-related, primarily because of the Barton force main break and the December windstorm.</p> <p>The Department of Natural Resources and Parks (DNRP) is following the scientific and technical developments for emerging chemicals of concerns, such as endocrine disrupting chemicals (EDCs).</p>
<p>WQPP-2: King County shall evaluate the impacts and benefits of actions that affect the quality of the region's waters and identify measures to meet and maintain water quality standards.</p>	<p>WTD builds, operates, and maintains wastewater facilities to ensure the county meets and exceeds water quality regulations and standards, such as NPDES discharge limitations. In 2006, the West Point and South plants received the National Association of Clean Water Agencies (NACWA) Platinum Peak Performance Award for operating five consecutive years with no permit exceptions.</p> <p>The county's new treatment plants, Brightwater and Carnation, will use membrane bioreactor technology, which produces a higher quality effluent than effluent produced by typical secondary treatment processes. The use of this technology will help to ensure these plants meet or exceed stringent water quality standards for effluent discharge or reclaimed water production.</p>
<p>WQPP-3: King County shall forecast future aquatic resource conditions that may affect wastewater treatment decisions and work cooperatively to identify cost-effective alternatives to mitigate water quality problems and enhance regional water quality.</p>	<p>King County routinely monitors and models the condition of county water resources and uses information from these efforts and from other programs in the region to identify trends.</p> <p>In 2006, DNRP in partnership with Pacific Northwest National Laboratory completed an Integrated Water Resource Modeling System, which will be used to evaluate diverse water, land use, population, and climate change scenarios and to inform decisions on</p>

Water Quality Protection Policies	How Implemented in 2004–2006
<p>complex issues such as drinking water withdrawal from urban lakes, instream flows for fish, wastewater capital project planning, and discharge of reclaimed water on agricultural fields.</p> <p>In 2005, King County, in cooperation with other sponsors, held a climate change conference. Experts presented possible future effects of climate change on the region, including impacts on availability of water resources and on flood management. WTD will continue to monitor the growing information on climate change and sea-level rise and will accommodate this information in its plans as needed.</p> <hr/> <p>WQPP-4: King County shall participate with its regional partners to identify methods, plans and programs to enhance water quality and water resources in the region.</p>	<p>The county works with other entities in the region on water quality monitoring and protection programs, including studies done in support of salmon conservation in the two major watersheds in the county.</p> <p>The county works with the Washington State Department of Ecology (Ecology) and local jurisdictions on developing and implementing Total Maximum Daily Loads for impaired surface waters and to develop a more coordinated ambient monitoring program. It also participates in the Puget Sound Partnership—a public/private group convened by the governor to develop an aggressive 15-year plan to solve Puget Sound’s most vexing problems—and works with University of Washington researchers to understand and plan for climate change. In addition, the county continues to participate in the Lower Duwamish Waterway Group on sediment clean up efforts.</p> <p>Since 2005, multiple agencies and organizations, including King County are participating in a regional water supply planning process for the purpose of identifying, compiling information on, and discussing many of the key issues that relate to or may affect water resources of the region.</p> <hr/> <p>WQPP-5: The King County executive shall implement a comprehensive water quality monitoring program of streams and water bodies that are or could be impacted by influent, effluent, sanitary system overflows or CSOs. The range of data to be gathered should be based on water pollutants and elements that scientific literature identifies as variables of concern, what is needed to substantiate the benefits of abating combined sewer overflows and what is required by state and federal agencies. The executive shall submit summary reports and comprehensive reviews of this information to the King County council as outlined in K.C.C. 28.86.165.</p> <p><i>(Ordinance 15384 amended this policy to include information and results of the water</i></p>

Water Quality Protection Policies	How Implemented in 2004–2006
<i>quality monitoring program in RWSP annual reports instead of as a separate report.)</i>	
WQPP-6: King County shall implement and maintain water quality, monitoring, evaluating and reporting programs to support the national pollutant discharge elimination system for wastewater and other permit applications, and ensure permit compliance.	King County has ongoing monitoring programs that assess discharge quality for permit compliance. Ambient water and sediment quality monitoring provides background information and assists in identifying any adverse impacts from wastewater facilities. A summary of these programs is provided in Chapter 9 and in Appendix O.
WQPP-7: King County shall actively participate in the development of water quality laws, standards and program development to ensure cost-effective maintenance or enhancement of environmental and public health.	The county uses many opportunities to participate in the development of effective and reasonable regulations, both on its own and through professional organizations such as the National Association of Clean Water Agencies, Water Environment Federation, and Pacific Northwest Clean Water Association. The county participates in advisory groups, contributes technical information, and reviews and comments on proposals. County staff has also been participating in nationwide discussions on emerging chemicals of concerns, such as endocrine disrupting chemicals (EDCs).
WQPP-8: King County shall assess the risk to human health and the environment from wastewater treatment and conveyance activities, and use this information in evaluating water pollution abatement control options.	<p>The Lower Duwamish Waterway Work Group (City of Seattle, Port of Seattle, the Boeing Company, and King County) completed human and ecological risk assessments as part of Phase 2 remedial investigation studies for the Lower Duwamish Waterway Superfund cleanup project.</p> <p>King County completed a screening-level aquatic life risk assessment in 2005 for the Green River watershed as part of the Green-Duwamish Water Quality Assessment. WTD is using the results of the Green-Duwamish Water Quality Assessment in capital planning efforts, including planning for CSO control projects. The results are also contributing to salmon conservation planning and Ecology's Total Maximum Daily Load program.</p> <p>In addition, aquatic life, wildlife, and human health risk assessments in the greater Lake Washington watershed were completed in 2006.</p>

Appendix I

RWSP Wastewater Planning Policies

RWSP Wastewater Planning Policies

A. Explanatory material. The wastewater planning policies are intended to guide the county in its long-term comprehensive planning for design and construction of facilities that meet the wastewater needs of customers within the service area.

Recognizing that the RWSP is a complex and dynamic comprehensive development guide that will regularly need to be updated, the county will conduct annual reviews of plan implementation and its consistency with policies, and of scientific, economic and technical information as well as periodic comprehensive reviews of the assumptions on which the RWSP is based.

These policies also express the intent of the council to request that the RWQC continue review of the conditions and assumptions that guide the implementation of the RWSP.

Wastewater Planning Policies	How Implemented in 2004–2006
WWPP-1: King County shall plan comprehensively to provide for the design and construction of facilities that meet the wastewater system needs of the service area and shall coordinate with other local jurisdictions to ensure that construction-related disruption to neighborhoods is minimized.	<p>WTD considers several factors to ensure comprehensive wastewater planning. Flow monitoring and facilities inspections provide key information related to capacity, maintenance, and asset replacement needs. WTD reviews population and employment forecasts, water conservation assumptions, and rainfall data and incorporates updated information into its planning of facilities. In addition, WTD reviews the comprehensive plans of its component agencies and meets with representatives of those agencies to confirm planning assumptions as well as to coordinate construction related activities.</p> <p>WTD regularly works with permitting agencies, local jurisdictions and affected neighbors during the planning, design and construction of projects to minimize construction related disruptions. Agreements related to hours of construction, parking for construction workers, noise control, and traffic control measures often result from these efforts.</p>
WWPP-2: In planning future wastewater systems, King County shall make a long-term assessment of wastewater system needs.	<p>To protect public health and water quality, it is essential to plan wastewater facilities before they are needed. The RWSP outlined wastewater needs through 2030 and beyond. Current planning is through 2050—when the county’s wastewater service area is expected to reach saturation. To ensure that existing and planned facilities will meet future needs, the county monitors population and employment forecasts, comprehensive plans of the county’s component agencies, the potential for new regulations, new technologies, and information relating to climate change.</p>
WWPP-3: In planning for facilities, King County shall work collaboratively with other jurisdictions and look for opportunities to achieve cost-savings.	<p>Recent examples of how this policy is implemented include:</p> <ul style="list-style-type: none"> • Executive’s Recommended I/I Program. The recommendations in this King County Council approved program represent the

Wastewater Planning Policies	How Implemented in 2004–2006
	<p>consensus reached by the county and component agencies throughout the six-year program development process. Implementation of this program is under way and will help determine if enough I/I can be cost-effectively removed from the collection system to delay, reduce, or eliminate some otherwise needed conveyance improvement project.</p> <ul style="list-style-type: none"> • Partnership with Ducks Unlimited. King County is partnering with Ducks Unlimited, a nonprofit organization dedicated to wetland conservation, to design the Carnation Treatment Plant wetland discharge project. This partnership will help reduce costs and expedite implementation of the project. • Brightwater Backbone. Building the reclaimed water pipes during construction of the Brightwater conveyance tunnels and providing reclaimed water to the Sammamish Valley from the backbone are more cost-effective than building and operating a stand-alone satellite facility in the Sammamish Valley. Building the backbone now is less expensive and less disruptive to the local jurisdictions than building it in the future. • Conveyance System Improvement (CSI) Program Update. During the process to update the CSI program, King County and the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC) worked collaboratively to identify and analyze alternative cost containment strategies, such as delaying or phasing project construction. To assist in identifying the most pressing conveyance system needs, prioritization criteria were jointly developed and applied to planned conveyance projects. • Ballard Siphon Replacement Project. Coordination within WTD also provides opportunities for cost-savings. The Ballard Siphon Replacement Project—initiated in 2006 and scheduled for completion in 2010—will protect water quality in the Lake Washington Ship Canal by replacing the 70-year-old wooden sewer pipe that extends across the floor of Salmon Bay near the Hiram M. Chittenden Locks. In addition, the project is being designed to bring the CSO at the Ballard Regulator Station under control and, thus, eliminate the need for the CSO storage project at this location scheduled in the RWSP

Wastewater Planning Policies	How Implemented in 2004–2006
WWPP-4: Facility sizing shall take into account the need to accommodate build-out population.	<p>for completion in 2029. The project also holds the potential to reduce CSOs at the 11th Avenue Regulator Station and thus reduce the size of the CSO storage project planned for completion at this location in 2030.</p> <p>As mentioned in WWPP-2, current planning considers needs through 2050, which is when the county's wastewater service area is anticipated to be fully built out and all portions of the service area will be connected into the wastewater treatment system. The updated conveyance system improvement program identifies the separated conveyance system needs that are necessary to accommodate projected regional growth and volumes of I/I through the year 2050 (see Chapter 3).</p> <p>The RWSP and subsequent population and flow updates identified needed future expansions to South Treatment Plant and Brightwater Treatment Plant.</p>
<p>WWPP-5: RWSP review processes. King County shall monitor the implementation of the RWSP and conduct reviews of the RWSP as outlined in K.C.C. 28.86.165.</p> <p><i>(Ordinance 15384 amended this policy, establishing a new section of the King County Code [KCC 28.86.165] that outlines the RWSP reporting policies.)</i></p>	<p>The reporting policies that were adopted by the King County Council in March 2006 are being followed. The 2005 RWSP Annual Report was submitted to the King County Council in September 2006; the RWQC reviewed the report in October 2006. The <i>RWSP 2006 Comprehensive Review and Annual Report</i> is presented in according with the RWSP reporting policies.</p> <p>The reporting and wastewater planning policies also call for the county to review assumptions on the rate and location of growth, on the rate of septic conversions, and on water conservation efforts.</p> <p>There were no updates made to the population and employment forecast data presented in the <i>RWSP 2004 Update</i> because there were no new PSRC forecasts by traffic analysis zones in 2004–2006. Projections reported in the 2004 update confirmed the need for the major treatment and conveyance improvements that are under way and planned through 2030. The process to update the conveyance system improvement (CSI) yielded information from the component agencies that prompted changes in some of the estimated dates that 20-year peak flow volumes will exceed the capacity of regional conveyance facilities (see Chapter 3). However, the overall projections for the 20-year peak flow in 2050 did not change.</p> <p>The key planning assumptions used to determine flow projections and facility sizing remain as follows:</p> <ul style="list-style-type: none"> • Extent of Eventual Service Area. The assumed extent of the planning area is the sewerable areas within Urban Growth Areas of King, Snohomish, and Pierce counties

Wastewater Planning Policies	How Implemented in 2004–2006
	<p>where King County WTD has sewage disposal contracts.</p> <ul style="list-style-type: none"> • Future Population. PSRC 2003 data by traffic analysis zones (TAZ), which is forecasted out to 2030, is allocated to sewer basins to determine future flow projections. The maximum wastewater system service area population is a straight line extrapolation of the growth rate between 2020 and 2030 out to 2050. • Water Conservation. WTD continues to assume a 10 percent reduction in per day water consumption between 2000 and 2010, with no additional reduction after 2010. • Septic Conversion. The current planning assumption is that 90 percent of the unsewered area (in year 2000) with potential for sewers will be sewered by 2030 and that 100 percent of this area will be sewered by 2050. • Infiltration/Inflow (I/I) Degradation. WTD assumes that I/I degradation starting in 2000 would be 7 percent per decade, with a limit of 28 percent over a 40-year period; for new construction, the degradation assumption of 7 percent per decade will start after the decade of construction, to a maximum of 28 percent. Future monitoring and modeling may provide refinements to this estimate. • Design Standard. In accordance with RWSP Conveyance Policy (CP)-1, the 20-year peak flow storm in 2050 is used as the design standard for the separated regional conveyance system. • Planning Horizon. The year 2050 is used to represent the projected date that the regional wastewater service area will be fully built out and all sewerable portions of the service area will be connected into the wastewater system. WTD extrapolates the PSRC population forecasts linearly from 2030 to 2050 for each of the wastewater basins. RWSP WWPP-4 calls for facility sizing to take into account the need to accommodate build-out population. <p>WTD will continue to review and analyze future information that could affect RWSP planning assumptions and make adjustments, if needed, to flow projections and facility needs and sizing.</p>

Appendix J

RWSP Environmental Mitigation Policies

RWSP Environmental Mitigation Policies

A. Explanatory material. The environmental mitigation policies are intended to guide King County in working with communities to develop mitigation measures for environmental impacts from the construction and operation of wastewater facilities. These policies also ensure that the siting and mitigation processes for wastewater facilities are consistent with the Growth Management Act and the state Environmental Policy Act.

Environmental Mitigation Policies	How Implemented in 2004–2006
<p>EMP-1: King County shall work with affected communities to develop mitigation measures for environmental impacts created by the construction, operation, maintenance, expansion or replacement of regional wastewater facilities. These mitigation measures shall:</p> <ol style="list-style-type: none"> 1. Address the adverse environmental impacts caused by the project; 2. Address the adverse environmental impacts identified in the county's environmental documents; and 3. Be reasonable in terms of cost and magnitude as measured against severity and duration of impact. 	<p>During the planning, environmental review, design, and construction of projects, WTD works with permitting and regulatory agencies, local jurisdictions, and affected businesses and residents to determine ways to develop mitigation measures for environmental impacts created by the construction, operation, maintenance, expansion or replacement of regional wastewater facilities.</p> <p>Examples of mitigation related activities that occurred during 2004 through 2006 include:</p> <ul style="list-style-type: none"> • Brightwater project: In December 2005, the county completed a Brightwater systemwide mitigation package that is the result of many meetings with the public and negotiations with jurisdictions, Tribal governments, and permitting agencies. Some of the mitigation addresses the short-term impacts of construction; other measures are intended to cover longer-term impacts, such as the changes visible facilities like the treatment plant will have on the community landscape. • Hidden Lake Pump Station/Boeing Creek Trunk Sewer Project: An agreement with the City of Shoreline includes mitigation measures related to transportation management; odor control; landscaping, temporary park access during construction, and stormwater and water quality improvements at Shoreview/Boeing Creek Park; a restoration and park access plan for Richmond Beach Saltwater Park; and a pavement restoration plan and pedestrian pathway along the route of the sewer pipe • Juanita Bay Pump Station Replacement Project: Mitigation measures during construction of this project include building sound walls on the portions of the site that are near apartment buildings and condominiums, implementing temporary erosion and sediment control measures, and traffic control measures.
EMP-2: Mitigation measures identified through	This policy is implemented for every project that

Environmental Mitigation Policies	How Implemented in 2004–2006
the state Environmental Policy Act process shall be incorporated into design plans and construction contracts to ensure full compliance.	<p>undergoes the SEPA review process. WTD environmental planners who prepare checklists review construction plans and specifications to make sure mitigation measures are included in these documents.</p> <p>Typical mitigation measures included in State Environmental Policy Act (SEPA) checklists for WTD projects include:</p> <ul style="list-style-type: none"> • Temporary erosion and sedimentation control measures during project construction • Measures to minimize noise, such as mufflers or sound barriers • Landscaping and architectural features to help facility blend into surrounding area • Actions to minimize light and glare • Construction traffic routing and parking plans.
EMP-3: The siting process and mitigation for new facilities shall be consistent with the Growth Management Act and the state Environmental Policy Act, as well as the lawful requirements and conditions established by the jurisdictions governing the permitting process.	<p>Wastewater treatment facilities are considered essential public facilities under the Growth Management Act. WTD plans new facilities or upgrades to existing facilities to ensure capacity is available when needed.</p> <p>Environmental, community, cost, right-of-way, and regulatory considerations are included in the process to site new wastewater facilities. WTD staff works with permitting agencies and local jurisdictions to ensure projects and facilities comply with applicable requirements and conditions.</p>
EMP-4: King County shall mitigate the long-term and short-term impacts for wastewater facilities in the communities in which they are located. The county's goal will be to construct regional wastewater facilities that enhance the quality of life in the region and in the local community, and are not detrimental to the quality of life in their vicinity.	<p>King County is committed to being a good neighbor with its wastewater facilities.</p> <p>In addition to the kinds of activities mentioned in EMP-1, landscaping and design features help to ensure that the county's wastewater facilities are good neighbors. Examples include:</p> <ul style="list-style-type: none"> • The northern 43 acres of the Brightwater Treatment Plant site are being redeveloped as a restored and enhanced salmon habitat and reforestation area. This area will include open space and trails that are accessible to the public and provide visual screening of the treatment plant site. • The design features of the Hidden Lake Pump Station incorporated community concerns that the facility fits into its residential setting. Adjustments include increasing the roof pitch; vegetative screening and landscaping; and building materials, such as tile roof and earth tones for the exterior. • The proposed design for the Juanita Bay Pump Station replacement reduces the building mass to preserve views from neighboring properties and includes

Environmental Mitigation Policies	How Implemented in 2004–2006
<p>EMP-5: King County shall enter into a negotiated mitigation agreement with any community that is adversely impacted by the expansion or addition of major regional wastewater conveyance and treatment facilities. Such agreements shall be executed in conjunction with the project permit review. Mitigation shall be designed and implemented in coordination with the local community, and shall be at least ten percent of the costs associated with the new facilities. For the south treatment plant and for the new north treatment plant, a target for mitigation shall be at least ten percent of individual project costs, or a cumulative total of ten million dollars for each plant, whichever is greater, provided that mitigation funded through wastewater revenues is consistent with: chapter 35.58 RCW; Section 230.10.10 of the King County Charter; agreements for sewage disposal entered into between King County and component agencies; and other applicable county ordinance and state law restrictions.</p>	<p>landscaping for aesthetics and screening. In addition, the facility will include sustainable “green-building” elements.</p> <p>This policy was written with the construction of a new third regional treatment system (now known as the Brightwater Treatment System) and the planned future expansion of the South Plant in mind. The Brightwater systemwide mitigation package that was completed in December 2005 is the result of many meetings with the public and negotiations with jurisdictions, Tribal governments, and permitting agencies. Information on the Brightwater systemwide mitigation package and agreements with local jurisdictions are available at http://dnr.metrokc.gov/WTD/brightwater/mitigation/index.htm</p>

Appendix K

RWSP Public Involvement Policies

RWSP Public Involvement Policies

A. Explanatory material. The public involvement policies are intended to guide the county in maintaining public information and education programs and to engage the public and component agencies in planning, designing and operating decisions that affect them.

Public Involvement Policies	How Implemented in 2004–2006
PIP-1: King County shall maintain public information/education programs and engage the public and component agencies of local sewer service in the planning, designing and operating decisions affecting them.	<p>WTD engages public officials and residents of affected jurisdictions in the planning and decision-making process for its projects and programs. WTD holds monthly meetings to share information on programs and projects that are at various stages of planning and implementation with the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC).</p> <p>Implementation of this policy in 2004 through 2006 include:</p> <ul style="list-style-type: none"> • The agricultural design for the future Carnation Treatment Plant was selected based on input from the public and Carnation City Council. • In response to community concerns, the design of the new Hidden Lake Pump Station was changed to ensure that it architecturally fits in its residential neighborhood. • In response to suggestions made at community meetings, the design of the new Juanita Bay Pump Station will protect sight lines from neighboring residences to the extent possible. In addition, native plant landscaping, building perimeter, and sidewalks will complement the neighborhood and nearby park. • Meetings were held around the Brightwater Treatment Plant and portal areas to update community members on design and mitigation issues and solicit their ideas and feedback. Comments were incorporated into the Brightwater systemwide mitigation package. • WTD worked with MWPAAC's Engineering and Planning Subcommittee to develop selection criteria and select projects for the initial I/I projects. • WTD staff met with staff from the component agencies to discuss regional conveyance system needs in their areas in preparation of the conveyance system improvement program update.
PIP-2: King County shall develop public information and education programs to support county wastewater programs and shall lay the	In addition to the information in PIP-1 and PIP-3, WTD's public information and outreach activities

Public Involvement Policies	How Implemented in 2004–2006
groundwork for public understanding of and involvement in specific programs.	<p>include:</p> <ul style="list-style-type: none"> • Speaker's bureau • Community open houses • Wastewater treatment plants and facilities tours • Informational booths at community fairs, festivals, and other events <p>WTD's Web site includes information on the county's wastewater system and process, programs planned for the future, projects in design and construction, and information on sewer rates and the capacity charge.</p> <p>WTD's Industrial Waste program has programs for businesses on pollution prevention, waste reduction, and water reuse.</p> <p>WTD's media relations keeps local news media informed about WTD projects and programs that affect the neighborhoods they serve as well as general information on the county's wastewater system.</p> <p>See PIP-5 for more information on WTD's informational and educational programs.</p>
PIP-3: King County shall involve public officials and citizens of affected jurisdictions early and actively in the planning and decision-making process for capital projects.	<p>WTD's public involvement program carries out activities to ensure public officials and affected residents and businesses have the opportunity to be informed and involved in the planning and decision-making process regarding capital projects. Activities include meetings, open houses, project Web sites, project bulletins and newsletters, mailings, and tours of facilities.</p>
PIP-4: King County shall inform affected residents and businesses in advance of capital construction projects.	<p>WTD's public involvement program includes informing affected residents and businesses of potential WTD related construction projects and activities. The program includes pre-construction meetings, fliers, signs, direct on-the-ground contact, and 24-hour project hotlines. Public involvement staff form part of WTD's construction project teams and is available to respond to questions and concerns. Procedures are in place to document and track questions, concerns, or complaints, and ensure prompt response. Lessons-learned evaluations are conducted to identify what has worked and applied to other projects.</p>
PIP-5: King County shall disseminate information and provide education to the general public, private sector and governmental agencies regarding the status, needs and potential future of the region's water resources.	<p>WTD helps to carry out the following informational and educational activities:</p> <ul style="list-style-type: none"> • Treatment Plant tours. This program introduced over three thousand students and hundreds of other interested parties annually to the importance of water conservation and the process of wastewater treatment. • Treatment Plant Open Houses. The two regional treatment plants host open houses each year that feature water conservation,

Public Involvement Policies	How Implemented in 2004–2006
	<p>water quality, and wastewater treatment information.</p> <ul style="list-style-type: none"> • Duwamish River Educational Events. Volunteer activities and public education events in 2006 featured a variety of information on water quality and water conservation. <p>Educational materials include:</p> <ul style="list-style-type: none"> • Lets Talk Trash brochures and posters. The Department of Natural Resources and Parks printed and distributed this resource on not using the toilet as a trash can. • Web based information. The water conservation tips web site, http://dnr.metrokc.gov/wtd/waterconservation/tips.htm, draws an average of 400 visits a month. A Web site on water supply was inaugurated in 2005; http://dnr.metrokc.gov/topics/water-supply/index.htm. • Award winning groundwater education video. This online groundwater animation is available via the Web at: http://dnr.metrokc.gov/wlr/wq/groundwater-animation.htm
<p>PIP-6: King County shall actively solicit and incorporate public opinions throughout the implementation of its comprehensive plan.</p>	<p>The activities described in PIP-1 through PIP-5 illustrate how WTD keeps people informed and involved in the projects and programs associated with implementing the RWSP.</p> <p>WTD solicits public feedback and opinion in its public meetings, open houses, informational booths, and through the annual water quality surveys and annual surveys of near neighbors of the regional treatment plants. Opportunities for public comment are also provided via WTD project Web sites, emails, letters, or phone calls.</p>
<p>PIP-7: Beginning January 1, 2001, King County shall implement a public awareness and education program regarding the environmental impacts and costs to wastewater rate payers of I/I in the local and regional conveyance systems.</p>	<p>The <i>2004 RWSP Update</i> discussed the efforts in 2000 through 2003 to educate and involve local agency staff and elected officials about I/I.</p> <p>A public opinion telephone survey regarding I/I was conducted in 2004. The survey included 400 homeowners in the general service area plus 100 from three of the I/I pilot project areas. They were asked about their role as a property owner in implementing solutions to reduce I/I, whether they preferred having voluntary and/or mandatory property owner actions, their willingness to pay to reduce I/I, and what would be acceptable community options to reduce I/I.</p> <p>In 2007, the county and the local agencies participating in the initial I/I projects as part of the <i>Executive's Recommended I/I Program</i> will carry out</p>

Public Involvement Policies	How Implemented in 2004–2006
	<p>an intensive public involvement effort associated with the field testing, pre-design, and design and construction work for the initial I/I reduction projects.</p> <p>WTD's I/I Web site continues to provide information on I/I is updated on a regular basis. In addition, WTD serves as a clearinghouse regarding information on technologies related to I/I reduction; this information is made available to MWPAAC members.</p>
<p>PIP-8: King County shall support regional water supply agencies and water purveyors in their public education campaign on the need and ways to conserve water. King County should promote pilot projects that support homeowner water conservation in coordination with water suppliers and purveyors, emphasizing strategies and technologies that reduce wastewater.</p>	<p>In 2005, King County and the Cascade Water Alliance signed a Memorandum of Understanding to address water supply needs; initiation of a regional water supply planning process also began that year. The county participates in activities to increase water conservation with the Partnership for Water Conservation. The county's water conservation Web site provides educational information that is used by water supply agencies and purveyors and the public.</p> <p>In accordance with this policy, the King County Council approved a five-year water conservation program through 2005 that emphasized water conserving retrofit projects. While no additional funding was allocated in the 2006 budget, the program was extended by one year to complete several projects that began in 2005, but were completed in 2006 (see Chapter 12).</p>

Appendix L

RWSP Financial Policies

RWSP Financial Policies

A. Under the provisions of the King County Charter and RCW 35.58.200, these financial policies are hereby adopted and declared to be the principal financial policies of the comprehensive water pollution abatement plan for King County, adopted by the Municipality of Metropolitan Seattle (Metro) in Resolution No. 23, as amended, and the RWSP, a supplement to the plan.

B. Explanatory material.

1. Financial forecast and budget. Policies FP-1 through FP-7* are intended to guide the county in the areas of prudent financial forecasting and budget planning and are included to ensure the financial security and bonding capacity for the wastewater system. This set of policies also addresses the county's legal and contractual commitments regarding the use of sewer revenues to pay for sewer expenses.

2. Debt financing and borrowing. Policies FP-8* through FP-11* are intended to guide the county in financing the wastewater system capital program. These policies direct that capital costs be spread over time to keep rates more stable for ratepayers by the county issuing bonds. A smaller share of annual capital costs will be funded directly from sewer rates and sewer revenues and capacity charges.

3. Collecting revenue. Policies FP-12* through FP-14* are intended to guide King County in establishing annual sewer rates and approving wastewater system capital improvement and operating budgets. Monthly sewer rates, which are the primary source of revenue for the county's regional wastewater system, are to be uniformly assessed on all customers. Customers with new connections to the wastewater system will pay an additional capacity charge. The amount of that charge is set by the council, within the constraints of state law.

4. Community treatment systems. Policy FP-15* is intended to guide the county in the financial management of community treatment systems.

*King County Code Reviser's note: Ordinance 15602 added new policies FP-3, FP-4 and FP-5, but this reference was not changed.

Financial Policies	How Implemented in 2004–2006
FP-1: The county shall maintain for the wastewater system a multiyear financial forecast and cash-flow projection of six years or more, estimating service growth, operating expenses, capital needs, reserves and debt service. The financial forecast shall be submitted by the executive with the annual sewer rate ordinance.	A six-year financial plan is submitted each year with the WTD sewer rate proposal and, again, with the annual budget proposal.
FP-2: If the operations component of the proposed annual wastewater system budget increases by more than the reasonable cost of the addition of new facilities, increased flows, new programs authorized by the council, and inflation, or if revenues decline below the financial forecast estimate, a feasible alternative spending plan shall be presented, at the next quarterly budget report, to the council by the executive identifying steps to reduce	There were no occurrences of the situation described in FP-2 in 2004–2006, nor are any anticipated for the near-term. If such a situation were to occur, this policy would be implemented.

Financial Policies	How Implemented in 2004–2006
cost increases. <i>(Ordinance 15602 amended this policy by splitting the policy into two policies, FP-2 and FP-3.)</i>	
FP-3: The executive shall maintain an ongoing program of reviewing business practices and potential cost-effective technologies and strategies for savings and efficiencies; the results shall be reported in the annual budget submittal and in an annual report to the RWQC. <i>(This policy was previously included as part of FP-2; Ordinance 15602 made this into its own policy.)</i>	The WTD Productivity Initiative is an ongoing systematic and comprehensive program for identifying ways to increase efficiency. This ten-year incentive program applies certain private-sector business practices, including an incentive-based cash payment to employees in the wastewater program, to cut operating costs, increase productivity and continue a high level of service and environmental protection for WTD's customers. A productivity report is submitted annually to the King County Council. Through 2006, the Productivity Initiative Pilot Program has resulted in a \$42.8 million savings to ratepayers. Summary information from this report for 2006 is included in Chapter 13 of this report. Summary information from future reports will be included in future RWSP annual reports.
FP-4: New technologies or changes in practice that differ significantly from existing technologies or practices shall be reported to the council and RWQC with projected costs prior to implementation and shall also be summarized in the RWSP annual report. <i>(Ordinance 15602 added this policy to the RWSP financial policies.)</i>	No new technologies or changes in practice that differ significantly from existing technologies or practices are under consideration for implementation.
FP-5: Significant new capital and operational initiatives proposed by the Executive that are not within the scope of the current RWSP nor included in the RWSP, or are required by new state or federal regulations will be reviewed by the RWQC and approved by the council to ensure due diligence review of potential impacts to major capital projects' schedules, including Brightwater, the bond rating or the sewer rate and capacity charge. <i>(Ordinance 15602 added this policy to the RWSP financial policies.)</i>	All capital and operational costs are reviewed as part of the annual budget adoption process. No initiatives of this type were included in either the capital or operating budget requests in 2004–2006.
FP-6: The county shall maintain for the wastewater system a prudent minimum cash balance for reserves, including but not limited to, cash flow and potential future liabilities. The cash balance shall be approved by the council in the annual sewer rate ordinance.	Cash balance reserves are reviewed as part of the annual sewer rate and budget adoption process. In addition, cash reserve balances are reviewed annually with the bond rating agencies.
FP-7: Unless otherwise directed by the council by motion, the King County department of natural resources and parks or its successor agency shall charge a fee that recovers all	All work performed by WTD for other public or private organizations has required the recovery of all direct and indirect costs.

Financial Policies	How Implemented in 2004–2006
<p>direct and indirect costs for any services related to the wastewater system provided to other public or private organizations.</p>	<p>The one and one-half percent of annual operating budget limit on “Culver” funds is strictly adhered to.</p> <p>This policy was amended by Ordinance 15602 based on concerns raised by MWPAAC and Suburban Cities Association members on the Regional Water Quality Committee. They requested that the county investigate alternative funding sources for water quality improvement activities.</p> <p>In April 2007, The King County Executive submitted to the King County Council a report on alternative methods to provide a similar level of funding assistance for water quality improvement activities. More details on this report are provided in Chapter 13 of this report.</p>
<p>FP-8: Water quality improvement activities, programs and projects, in addition to those that are functions of sewage treatment, may be eligible for funding assistance from sewer rate revenues after consideration of criteria and limitations suggested by the metropolitan water pollution abatement advisory committee, and, if deemed eligible, shall be limited to one and one half percent of the annual wastewater system operating budget. An annual report on activities, programs and projects funded will be made to the RWQC. Alternative methods of providing a similar level of funding assistance for water quality improvement activities shall be transmitted to the RWQC and the council within seven months of policy adoption.</p> <p><i>(Ordinance 15602 amended this policy; it replaced the last sentence, which previously stated: “This policy shall remain in effect until such time as a financial plan for the surface water regional needs assessment is adopted and implemented.” with “Alternative methods of providing a similar level of funding assistance for water quality improvement activities shall be transmitted to the RWQC and the council within seven months of policy adoption.”)</i></p>	
<p>FP-9: The calculation of general government overhead to be charged to the wastewater system shall be based on a methodology that provides for the equitable distribution of overhead costs throughout county government. Estimated overhead charges shall be calculated in a fair and consistent manner, utilizing a methodology that best matches the estimated cost of the services provided to the actual overhead charge. The overall allocation formula and any subsequent modifications will be reported to the RWQC.</p>	<p>Overhead costs of King County general government are allocated by the Executive budget office to all parts of the county on a consistent basis.</p>
<p>FP-10: The assets of the wastewater system are pledged to be used for the exclusive benefit of the wastewater system including operating expenses, debt service payments, asset assignment and the capital program associated therewith. The system shall be fully reimbursed for the value associated with any use or transfer of such assets for other county government purposes. The executive shall provide reports to the RWQC pertaining to any</p>	<p>There have been no transfers of assets in 2004–2006.</p>

Financial Policies	How Implemented in 2004–2006
significant transfers of assets for other county government purposes in advance of and subsequent to any such transfers.	
FP-11: The county shall structure bond covenants to ensure a prudent budget standard.	Bond covenants are strictly followed, monitored, and revised to maintain prudent and conservative standards. Outstanding bonds are constantly monitored for refunding opportunities to lower interest rates/debt service. In 2004 and 2006 \$62 million and \$171 million in bonds were refunded respectively.
FP-12: King County should structure the term of its borrowings to match the expected useful life of the assets to be funded.	In 2007, WTD increased the term of bonds issued to 40 years. In addition to moderating the impact to current sewer rates, this provides a better match between the life of the facilities and the debt financing their construction.
FP-13: The wastewater system's capital program shall be financed predominantly by annual staged issues of long-term general obligation or sewer revenue bonds, provided that: All available sources of grants are utilized to offset targeted program costs; Funds available after operations and reserves are provided for shall be used for the capital program; excess funds accumulated in reserves may also be used for capital; Consideration is given to competing demands for use of the county's overall general obligation debt capacity; and Consideration is given to the overall level of debt financing that can be sustained over the long term given the size of the future capital programs, potential impacts on credit ratings, and other relevant factors such as intergenerational rate equity and the types of projects appropriately financed with long-term debt.	WTD capital expenditures are predominantly funded by the issuance of Sewer Revenue Bonds. County General Obligation Bonds are not expected to be a significant portion of new debt issuance. Through 2004, funds from meeting debt-service coverage requirements were transferred to the capital program. Beginning in 2005, funds from meeting debt-service coverage requirements are transferred to the capital program and the rate stabilization fund.
FP-14: To achieve a better maturity matching of assets and liabilities, thereby reducing interest rate risk, short-term borrowing shall be used to fund a portion of the capital program, provided that: Outstanding short-term debt comprises no more than fifteen percent of total outstanding revenue bonds and general obligation bonds; and Appropriate liquidity is available to protect the day-to-day operations of the system.	Short-term (junior lien) debt is targeted for approximately 15 percent of the total debt issued. Year-end liquidity reserves are targeted at 15 percent of the year's operating expense total.
FP-15: King County shall charge its customers sewer rates and capacity charges sufficient to	Beginning in 2002, WTD was reorganized to include an asset management section to reinforce the emphasis and visibility on maintaining the current assets of the

Financial Policies	How Implemented in 2004–2006
<p>cover the costs of constructing and operating its wastewater system. Revenues shall be sufficient to maintain capital assets in sound working condition, providing for maintenance and rehabilitation of facilities so that total system costs are minimized while continuing to provide reliable, high quality service and maintaining high water quality standards.</p> <p>1. Existing and new sewer customers shall each contribute to the cost of the wastewater system as follows:</p> <p>a. Existing customers shall pay through the monthly sewer rate for the portion of the existing and expanded conveyance and treatment system that serves existing customers.</p> <p>b. New customers shall pay costs associated with the portion of the existing wastewater conveyance and treatment system that serves new customers and costs associated with expanding the system to serve new customers. New customers shall pay these costs through a combination of the monthly sewer rate and the capacity charge. Such rates and charges shall be designated to have growth pay for growth.</p> <p>2. Sewer rate. King County shall maintain a uniform monthly sewer rate expressed as charges per residential customer equivalent for all customers.</p> <p>a. Sewer rates shall be designed to generate revenue sufficient to cover, at a minimum, all costs of system operation and maintenance and all capital costs incurred to serve existing customers.</p> <p>b. King County should attempt to adopt a multiyear sewer rate to provide stable costs to sewer customers. If a multiyear rate is established and when permitted upon the retirement by the county of certain outstanding sewer revenue bonds, a rate stabilization reserve account shall be created to ensure that adequate funds are available to sustain the rate through completion of the rate cycle. An annual report on the use of funds from this rate stabilization account shall be provided annually to the RWQC.</p> <p>c. The executive, in consultation with the RWQC, shall propose for council adoption policies to ensure that adequate debt service coverage and emergency reserves are</p>	<p>utility.</p> <p>King County maintains a uniform monthly sewer rate in accordance with this policy.</p> <p>The sewer rate is set on an annual basis such that, given projections of other revenues and costs, the revenue requirements for providing wastewater services are met.</p> <p>The recent refinancing of certain bond series has lifted bond covenants that constrained the creation of a true rate stabilization reserve. Under the old parity bond covenants, revenues earned in one year could be recognized only in that year, forcing all excess operating revenues to be used to fund capital projects. This reduced the utility's borrowing needs; however, the resulting reduction in debt service had only a modest impact on the subsequent year's rate. With a rate stabilization reserve, excess revenues generated in the first year of a multi-year rate can be treated as operating revenues for the subsequent year. These revenues therefore can be applied directly to debt coverage requirements in the subsequent year, allowing for a reduction of the multi-year rate. For example, the adopted 2007 rate includes the use of such a reserve with a year-end 2007 reserve balance projected to be \$20 million. The full amount of this reserve is projected to be used in 2008 to keep the sewer rate level. The use and planned use of the rate stabilization funds are included in the rate transmittal. Information on the rate stabilization account is included in the annual sewer rate briefing to RWQC.</p> <p>The debt service coverage minimum is based on meeting two ratios, 1.25 on parity debt and a target of 1.15 on all debt.</p> <p>The capacity charge is based on the methodology listed in this policy.</p>

Financial Policies**How Implemented in 2004–2006**

established and periodically reviewed.

3. Capacity charge. The amount of the capacity charge shall be a uniform charge, shall be approved annually and shall not exceed the cost of capital facilities necessary to serve new customers. The methodology that shall be applied to set the capacity charge is set forth in FP-12.3.a*.

a. The capacity charge shall be based on allocating the total cost of the wastewater system (net of grants and other non rate revenues) to existing and new customers as prescribed in this subsection. The total system cost includes the costs to operate, maintain, and expand the wastewater system over the life of the RWSP. Total estimated revenues from the uniform monthly rate from all customers and capacity charge payments from new customers, together with estimated non rate revenues, shall equal the estimated total system costs. The capacity charge calculation is represented as follows:

$$\text{Capacity Charge} = \frac{[\text{Total system costs} - \text{rate revenue from existing customers}] - \text{Rate revenue from new customers}}{\text{Number of new customers}}$$

where:

(1) total system costs (net of grants and other non rate revenues) minus rate revenue from existing customers equals costs allocated to new customers.

(2) costs allocated to new customers minus rate revenue from new customers equals the total revenue to be recovered through the capacity charge.

(3) total capacity charge revenue requirements divided by the total number of new customers equals the amount of the capacity charge to be paid by each new customer.

b. The capacity charge may be paid by new customers in a single payment or as a monthly charge at the rate established by the council. The county shall establish a monthly capacity charge by dividing that amount by one hundred eighty (twelve monthly payments per year for fifteen years). The executive shall transmit for council adoption an ordinance to adjust the discount rate for lump sum payment. The executive shall also transmit for council

Financial Policies	How Implemented in 2004–2006
<p>adoption an ordinance to adjust the monthly capacity charge to reflect the county's average cost of money if the capacity charge is paid over time.</p>	
<p>c. King County shall pursue changes in state law to enable the county to require payment of the capacity charge in a single payment.</p>	
<p>d. The capacity charge shall be set such that each new customer shall pay an equal share of the costs of facilities allocated to new customers, regardless of what year the customer connects to the system. The capacity charge shall be based upon the costs, customer growth and related financial assumptions used for the Regional Wastewater Services Plan adopted by Ordinance 13680 as such assumptions may be updated. Customer growth and projected costs, including inflation, shall be updated every three years beginning in 2003.</p>	
<p>e. The county should periodically review the capacity charge to ensure that the actual costs of system expansion to serve new customers are reflected in the charge. All reasonable steps should be taken to coordinate the imposition, collection of and accounting for rates and charges with component agencies to reduce redundant program overhead costs.</p>	
<p>f. Existing customers shall pay the monthly capacity charge established at the time they connected to the system as currently enacted by K.C.C. 28.84.055. New customers shall pay the capacity charge established at the time they connect to the system.</p>	
<p>g. To ensure that the capacity charge will not exceed the costs of facilities needed to serve new customers, costs assigned and allocated to new customers shall be at a minimum ninety five percent of the projected capital costs of new and existing treatment, conveyance and biosolids capacity needed to serve new customers.</p>	
<p>h. Costs assigned and allocated to existing customers shall include the capital cost of existing and future treatment, conveyance and biosolids capacity used by existing customers, and the capital costs of assessing and reducing infiltration and inflow related to the use of the existing conveyance and treatment capacity.</p>	
<p>i. Capital costs of combined sewer</p>	

Financial Policies

How Implemented in 2004–2006

overflow control shall be paid by existing and new customers based on their average proportionate share of total customers over the life of the RWSP.

j. Operations and maintenance costs shall be paid by existing and new customers in the uniform monthly rate based on their annual proportionate share of total customers.

k. Any costs not allocated in FP-12.3 f, g, h, i and j* shall be paid by existing and new customers in the sewer rate.

l. Upon implementation of these explicit policies, the Seattle combined sewer overflow benefit charge shall be discontinued.

4. Based on an analysis of residential water consumption, as of December 13, 1999, King County uses a factor of seven hundred fifty cubic feet per month to convert water consumption of volume-based customers to residential customer equivalents for billing purposes. King County shall periodically review the appropriateness of this factor to ensure that all accounts pay their fair share of the cost of the wastewater system.

*King County Code Reviser's note: Ordinance 15602 added new policies FP-3, FP-4 and FP-5, but this reference was not changed.

FP-16: The executive shall prepare and submit to the council a report in support of the proposed monthly sewer rates for the next year, including the following information:

Key assumptions: key financial assumptions such as inflation, bond interest rates, investment income, size and timing of bond issues, and the considerations underlying the projection of future growth in residential customer equivalents;

Significant financial projections: all key projections, including the annual projection of operating and capital costs, debt service coverage, cash balances, revenue requirements, revenue projections and a discussion of significant factors that impact the degree of uncertainty associated with the projections;

Historical data: a discussion of the accuracy of the projections of costs and revenues from previous recent budgets, and

Policy options: calculations or analyses, or both, of the effect of certain policy options on the overall revenue requirement.

These options should include alternative capital

All key assumptions, significant financial projections, historical results, and policy options are provided as part of the annual sewer rate submittal letter and attachments.

Financial Policies	How Implemented in 2004–2006
program accomplishment percentages (including a ninety percent, a ninety-five percent and a one hundred percent accomplishment rate), and the rate shall be selected that most accurately matches historical performance in accomplishing the capital program and that shall not negatively impair the bond rating.	
FP-18: The cost of community treatment systems developed and operated in accordance with WWSP-15 would not be subsidized by the remaining ratepayers of the county's wastewater treatment system.	This policy has been adhered to since the adoption of the RWSP.

Appendix M

RWSP Reporting Policies

RWSP Reporting Policies

A. The executive shall review the implementation of the RWSP on a regular basis and submit the following reports to council and the RWQC:

Note: These policies were adopted by Ordinance 15384 in March 2006.

Reporting Policies	How Implemented in 2004–2006
<p>A. Regional wastewater services plan annual report. The executive shall submit a written report to the council and RWQC in September each year until the facilities identified in the RWSP are operational. This report, covering the previous year's implementation, will provide the following:</p> <ol style="list-style-type: none"> 1. A summary of activities for each major component of the RWSP, including treatment, conveyance, infiltration and inflow, combined sewer overflows, water reuse, biosolids and highlights of research and development projects underway and proposed for the coming year; 2. Details on each active RWSP project in the capital budget, including a project summary, project highlights, project issues, upcoming activities, schedules, an expenditures summary including staff labor and miscellaneous services, a description of adjustments to costs and schedule and a status of the projects contracts; 3. A status of the odor prevention program, including a listing and summary of odor complaints received and progress on implementing odor prevention policies and projects; 4. A summary of the previous year's results for the comprehensive water quality monitoring program; 5. A review of the plan elements, including water pollution abatement, water quality, water reclamation, Endangered Species Act compliance, biosolids management and variability of quality over time, wastewater public health problems, compliance with other agency regulations and agreements, to ensure it reflects current conditions; and 6. An update of anticipated RWSP program costs through the year 2030 	<p>The RWSP annual reports are submitted to the King County Council in September to cover the previous year's implementation and include information on the items listed in 1 through 6 of this policy. The King County Executive has transmitted an annual report to the King County Council every year since the year 2000.</p> <p>The elements of the RWSP 2006 annual report are included in the <i>RWSP 2006 Comprehensive Review and Annual Report</i>.</p>
<p>B.1. Comprehensive regional wastewater services plan review. The executive shall submit a written report to council and RWQC</p>	<p>The <i>RWSP 2006 Comprehensive Review and Annual Report</i> is the second RWSP comprehensive review and covers implementation of the RWSP from 2004 through</p>

Reporting Policies	How Implemented in 2004–2006
<p>that provides a comprehensive review of the RWSP. The report will review the following:</p> <ul style="list-style-type: none">a. assumptions on the rate and location of growth, the rate of septic conversions and the effectiveness of water conservation efforts;b. phasing and size of facilities; andc. effectiveness of RWSP policies implementation, for infiltration and inflow reduction, water reuse, biosolids, CSO abatement, water quality protection, environmental mitigation and public involvement; <p>2. The next comprehensive regional wastewater services plan review is due in September 2007. Subsequent reports will be prepared every three to five years as established by the council and RWQC following their review of the current report. The specific due date will be based upon the availability of necessary information, the completion of key milestones, and the time needed to collect and analyze data. The executive may recommend policy changes based on the findings of the report and other information from changing regulations, new technologies or emerging or relevant factors;</p> <p>3. The comprehensive regional wastewater services plan review will include all elements of the RWSP annual report, replacing it for that year.</p> <p>C. Brightwater monthly report. The executive shall prepare a monthly report to council for the Brightwater project based on a reporting format approved by motion by the King County council. The reporting format shall include a project summary, project highlights, project issues, upcoming activities, schedules, an expenditures summary including staff labor and miscellaneous services, a description of adjustments to costs and schedule and a status of the project's contracts. This report will be distributed electronically and will continue until Brightwater becomes operational.</p>	<p>2006. The first RWSP comprehensive review (<i>2004 RWSP Update</i>) covered RWSP implementation from 1999 through 2003.</p> <p>The Brightwater monthly report is made available to the King County Council electronically in the format that was approved by Motion 12189 in August 2005.</p>
<p>D. Operational master plan. The RWSP Operational Master Plan that was adopted by council in December 1999 shall be updated on a regular basis in conjunction with policy revisions to the RWSP.</p>	<p>The Wastewater Treatment Division (WTD) anticipates completing an update to the OMP in the second quarter of 2008.</p>

Appendix N

2006 Summary of Odor Complaints

Appendix N

2006 Summary of Odor Complaints

Location	Date	Complaint	Resolution
West Point Treatment Plant (TP)			
West Point TP	6/26/06	Complainant sensed a combination of fish, rotten eggs and manure-like odors and felt convinced the West Point Plant is the source of the odors.	Plant operations on the day of the complaint were normal. There was a low tide at noon a. No further action taken.
West Point TP	7/03/06	Complainant sensed very strong odors from what he thinks is coming from the West Point Treatment Plant.	At the time he sensed the odors (0800), there was a plant shutdown so no flow was coming into the plant until 0845. Start up was normal with no problems. All of the plant's odor control units were operating normally. Southerly winds tend to rule out West Point as the source of odor. A copy of the odor report was mailed to the complainant per his requested.
West Point TP	7/25/06	Complainant said he sensed very strong odors and thought they were from the West Point Treatment Plant.	No odor sensed around residence at the time of investigation. Staff spoke with the caretaker of the house concerning odors that were coming from the south, which is away from the plant. There are a number of city of Seattle vent lines in the area so a failed septic system, a pumping system that has sludged up or a p-trap that has dried out are all potential sources of odor. A copy of the odor report was mailed to the complainant per his request.
West Point TP	8/01/06	Complainant said he sensed odors from the West Point Treatment Plant.	All of the odor control units were operating and prechlorination was on at 3000 pounds per day. Digester foam and cleaning of it was the most likely cause. Added defoaming agent in order to reduce the amount of foam.
West Point TP	8/09/06	Complainant sensed odors from the West Point Treatment Plant.	While no odors were detected around the beach and the berm area, the wind direction was north to south so the plant could have been the source of the odor. Resolution: Operations staff continuing to hose and clean the roof of the digesters. Defoaming agent being applied to reduce the amount of foam.
West Point TP	8/14/06	Complainant sensed odors from the West Point Treatment Plant.	At the time of the complaint, the wind direction was NNE at 14 mph and the tide was +10 feet. Operations staff continued to hose and clean the roof of the digesters. Continued normal plant operations and ensured that all doors and hatches that are potential odor sources are closed.

Appendix N. 2006 Summary of Odor Complaints

Location	Date	Complaint	Resolution
West Service Area Offsite			
Magnolia, Queen Anne area, Crown Hill and Ballard	1/24/06	Widespread odor complaints, from Magnolia, Queen Anne area, Crown Hill and Ballard.	Only two complaints were called into West Point Main Control, and both complainants did not want to fill out a report. The only problem found was that the Phoenix odor control unit at the Lake City Regulator was flooded with water, thus making it inoperable. However, no complaints were registered from that vicinity. Since there aren't any KC conveyance lines in the areas where the complaints were called in from, it's highly unlikely that King County facilities were the cause of the complaints. The Phoenix unit problem was corrected and placed back in service. Designated as a non-county complaint.
City of Lake Forest Park	2/08/06	Odors sensed for over an hour near the vicinity of highway 522 & 73 rd to the county line.	The nearest KC facility is the McAleer odor control unit on Perkins Way. Investigation showed no odors sensed from the unit. Also, flows from the Lake Ballinger pump station were being pumped to the city of Edmonds at this time. Since no odor was detected at the odor control unit and the odor was detected within a wide area, it was designated as a non-county complaint.
Wallingford area	2/08/06	Complainant sensed manure odor.	Nearest KC manholes are N23-12 and N23-13. The area between the two manholes was investigated and no odors found. The manholes were not pressurized. Designated as a non-county complaint.
Taylor Avenue and Lee Street	2/08/06	Complainant sensed sewage odor at his residence.	Investigated the area around his residence; there are no KC manholes or facilities within the immediate vicinity. The nearest KC facility is the Dexter Regulator. Dexter was checked and found to have no problems. Designated as a non-county complaint.
Baker Ave, Fremont area	2/09/06	Complainant sensed a "pulp mill" odor near his residence, similar to the odor problem that occurred on 1/24/06.	The area in question was investigated, and no odors sensed. The Lake City Regulator odor control unit was working fine. Designated as a non-county complaint.
Golden Gardens Dr NW	3/20/06	Complainant sensed moderate sewage odors during the late evening hours and thought they were emanating from the West Point Plant, though the nearest KC facility was the North Beach Pump Station.	Investigation revealed no odors at complainant's address, as well as driving around the Ballard area en route to Golden Gardens Park. Manhole closest to complainant's address belonged to city of Seattle and no odors sensed at nearby city of Seattle lift station. Spoke to local citizen, who denied sensing any sewer odors. The complaint was designated as a non-county complaint.
Lake City Regulator	4/11/06	Complainant stated that they thought odors were coming from the Lake City Regulator Station.	Found no problems with the odor control unit at the Lake City Regulator. OdaLog readings were low and sensed no odors during the walk around the station and on the trail north

Appendix N. 2006 Summary of Odor Complaints

Location	Date	Complaint	Resolution
			and south of the station. No further action taken.
NE 175 th St., Kenmore	4/18/06	Odors emanating from manholes in backyard of complainant's residence.	Low odor was detected at the time of investigation. Resolution: the manholes were sealed with plastic and corked.
3722 27 TH Place W.	4/20/06	Complainant contacted King County Councilmember Larry Phillips about sewage odors from the West Point Treatment Plant. She sensed the odors on 3/26, but the complaint letter was received at West Point on 4/18.	From the operator log, the odor systems appeared to be running normally. The only unusual occurrence was that 2 cogens were running and may have been a factor. Resolution: WTD Director sent a response l on 4/20. Signs were also placed around the plant trails with Main Control's phone number for future odor complaint call-ins
Dexter Avenue	4/20/06	Complainant sensed odors from a sewer grate next door to the Dexter Regulator.	Investigation did not detect any odors and the odor control system at Dexter was operating properly. The drain (grate) in question may not be King County's but belongs to the complex adjacent (Olympic Hot Tub's back south door). Designated as a non-county complaint.
Riviera Pl. NE	4/27/06	Complainant sensed strong "methane-like" odor from a drain in her home.	The odor was gone at the time of investigation. Water was added to the basement drain to alleviate the odor problem. City of Seattle notified of possible blockage. Complainant stated that there appeared to be human waste in the catch basin across from her home. Designated as a non-county complaint.
Lake City Regulator	5/03/06	Complainant sensed sewage odors inside building coming through vents from the outside.	Investigation revealed some odor emanating from the Lake City Regulator odor control exhaust stack, with outlet readings at 680 ppb H2S. A check at Kenmore revealed that the power to the Bioxide chemical injection system had kicked out, which resulted in the high inlet H2S readings at Lake City. The power was restored and chemical addition restarted. The complainant was notified of the findings.
28 th Ave NE	5/05/06	Complainant stated that sewage odors appeared to be coming from inside her house.	Nearest KC facility is the 30 th Street Regulator. The odor control unit there was operational and perimeter monitoring detected no odors. No further action taken. Could not contact person directly as no house number was given, and left message on answering machine about odor investigation. Designated as a non-county complaint.
Lake City Regulator	5/12/06	Complainant sensed odors all week during the afternoon hours.	Faint odors were noticed at the Lake City Regulator but none at the complainants address. The odor control units were operational and Bioxide was being fed at Kenmore at the time of the complaint. The water regeneration cycle was increased and the odor control units were placed in series.
Dexter	5/21/06	Complainant sensed odors the day	Investigation revealed that the exhaust fan by

Appendix N. 2006 Summary of Odor Complaints

Location	Date	Complaint	Resolution
Regulator		before near the Dexter Regulator station.	the gate room door was running. This fan is normally turned off. The fan was shut off and a message left on the complainant's phone regarding the outcome of the investigation.
Bothell Way NE, manhole W11-72	5/21/06	Complainant sensed intermittent sewer odors for the past week and a half.	The odor was found to be emanating from a manhole (W11-72). The manhole cover was sealed but was found to have cracks in the riser. Facilities Construction was contacted about replacing the riser. The complainant was notified of the investigative results.
Lake Forest Park, 44 th Avenue	6/12/06	Complainant has sensed odors near the McAleer Trunk for the past few years.	Slight sewage odors were sensed from four manholes (W502-7 to W502-10). All four were eventually sealed. No further action taken.
Thorndyke West	6/28/06	Frequent complainant sensed moderate odors from a manhole outside her building	The Mobile odor unit at the Wheeler Street Discharge Structure was kicked out (fan was off for 2 days). The unit was reset and the complainant was notified of the findings.
Sludge Truck on Elliot West	6/29/06	West Point plant manager informed Main Control about very strong odors emanating from a sludge truck he was following on Elliot West.	Biosolids staff is investigating what can be done to control the odors better.
NE 175 th St., Kenmore	7/19/06	Complainant sensed moderate "manure/rotten egg" odors from a sewer manhole in her driveway.	No odors were present at the time of investigation.
NE 175 th St., Kenmore	7/20/06	Complainant sensed moderate "manure/rotten egg" odors from a sewer manhole inside her home.	Notified the flow monitoring group to seal up the manhole after entry. Installed plastic under the manhole and caulked around the ring and plugs.
Thorndyke W.	7/21/06	Complainant sensed sewer odors inside her business. Intense sewage odors sensed at the Wheeler Street Force Main Discharge Structure.	The odor control unit at the structure was found tripped. The fan breaker was reset and a work order written to have the fan checked out.
25 th Ave NE	8/02/06	Complainant sensed odors starting in May from sinks in the bathroom.	There was a mold/ammonia type odor present in the bathroom upon investigation. Checked for hydrogen sulfide and methane readings, none were recorded. No further action taken at this time. Based on the investigative results, the complaint was designated as non-county.
Riviera Pl. NE	8/04/06	Seattle Public Utilities informed King County that resident had sensed strong sewer odors nearby.	Investigation showed that the odor control unit fan at the Matthews Beach pump station was not running. It failed due to electrical work and testing at the station. The fan was restarted.
Manhole north of Ravenna Avenue & NE 53 rd St.	8/08/06	Complainant sensed strong odors from manhole that was part of the Laurelhurst Trunk.	The manhole was sealed at the request of the complainant.
McAleer	8/09/06	Complainant sensed faint sewer	The McAleer odor control unit was off-line

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Location	Date	Complaint	Resolution
Odor Control Unit		odors inside her home.	briefly for maintenance work when she called. After the work was completed, the unit was placed back in service.
North Portal	8/16/06	Complainant sensed strong sewer odors inside his home.	When the odor was first noticed, Matthews pump station was off for a storage program. Suspect that the odor complaint resulted from an elevated wet well level (due to the storage program) which affected the odor control system at Matthews. The pump station was back in operation.
Beach Drive NE, lakeline	8/18/06	Complainants sensed odors inside their home.	The odor control units at Matthews and Logboom were in operation, as well as the chemical injection system at Kenmore. Resolution: The high wet well level at Matthews restricted airflow from the lakeline, backing it up and causing the complaint.
Stone Ave N	8/21/06	Complainant has sensed "gaseous" odors inside her home for the past few months. Suspect that the trucks carrying "hot tar" from the roofing company located the next block is the cause if the odors. She is concerned about the harmful effects of breathing the fumes.	Designated as a non-county complaint.
NE 10 th Avenue & 30 th Ave NE. manhole NWW 13-07	8/23/06	Received odor complaint via Seattle Public Utilities.	During the investigation, a faint sulfide odor was detected from manhole NWW13-07. Recommended that the manhole be plugged if future complaints are received.
NE 145 th St., Woodinville	8/28/06	Complainant sensed odors in the driveway from her apartment complex the past few weeks.	Investigation showed strong sulfide odors coming out from a manhole that had a broken riser. Contacted Facilities Maintenance to have the manhole riser repaired.
Beach Drive NE		Complainant sensed odors inside their home.	There was no odor present at the time of the investigation The carbon in the scrubber on the Fletcher's property was scheduled to be changed.
40 th Ave NE	9/04/06	Complainant sensed moderate odors inside her residence.	A slight ammonia odor was sensed around her home. The nearest KC facility is the Belvoir Pump Station. The wet well was pumped down, although the odor did not appear to be associated with the KC facility. Designated as a non-county complaint.
West Seattle Force Main Discharge Structure	9/25/06	Complainant sensed odors inside her building.	Complainant sensed odors inside her building 3 weeks before she phoned in the complaint. Strong odors were coming out the odor control unit stack. The fan was shut off until the carbon in the unit was changed out. The complainant was notified of the findings.
Beach Drive NE, Lake Forest Park	10/03/06	Odors emanating from manhole outside of complainant's garage.	Part of the problem could be Kenmore's pump #2 cycling on and off. At the time of investigation, odor was also sensed at the nearby KC facility at Logboom and also from

Appendix N. 2006 Summary of Odor Complaints

Location	Date	Complaint	Resolution
			manhole from the Ronald Wastewater District at 155562 Beach Drive NE. Problem is being discussed at the KC Odor / Corrosion Taskforce Meetings.
Thorndyke Avenue	10/12/06	Complainant sensed moderate odors inside her building.	Upon investigation, it was found that the Wheeler Street mobile odor control unit was kicked out and not operating. An electrician was called in for the repairs and placed the unit back in service.
NW Canal St./ Fremont Siphon Forebay, Sandcatcher	10/13/06	Complainant(s) have often sensed odors emanating from a large structure across the street from their residence at 1st Avenue NW and Canal St.	No odors were sensed at the time of investigation Complainant wanted information about the King County's policy on odors and asked if anything could be done regarding sealing up the sewer system to control odors. Will discuss at next Odor / Corrosion Task Force Meeting.
Perkins Way / McAleer Odor Control Unit	12/13/06	Complainant sensed strong rotten egg odor from the McAleer odor control unit.	Moderate hydrogen sulfide was measured from the outlet and positive pressure detected from the manhole access to the odor control fan room. The flexible duct connection for the unit was checked for leaks but none found. Plugs were placed in the manhole cover. The carbon in the unit will be replaced as soon as the plant Vactor truck gets returned from Fleet.
South Treatment Plant (TP)			
South Treatment Plant	7/11/06	Complaint received via phone call from an inspector with the Puget Sound Clean Air Agency. A message was received on their odor hot-line about strong odors while driving past the plant on I-405.	Since the odor complaint was received by King County 4 days after the original odors were sensed, no investigation was made. All odor control units were operating at the time of the complaint. No unusual operating activities occurred the day of the complaint, but there were some tanks in the secondary area that needed to be cleaned which may have contributed to a greater potential of odors. The inspector was informed about the upcoming project to cover parts of the aeration tanks.
South Treatment Plant	7/19/06	Complainant sensed strong "solvent/chemical -type" odors from the plant when driving and exiting off I-405.	At the time of the complaint the holding tank mixer and aerator were in service, both potential sources of odor. Since the odor complaint was received 12 hours after the complainant last sensed the odors, no investigation was performed. All odor control units were operating at the time of the complaint, and no unusual plant activities were mentioned in the operator's log. Complainant is staying at hotel across the street from the plant and informed him that should he sense the odors again to call our Main Control number immediately.
South Treatment	8/04/06	Complainant sensed strong odors along Grady Way during	An investigation was performed around the plant when he called; did not detect any odors

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Location	Date	Complaint	Resolution
Plant		evening/nighttime hours but informed plant the next morning.	outside the fenceline. All odor control units were operational. Suspect that the aeration tanks were the most probable cause of the odor complaint. No further action taken at this time. The complainant was informed about the project to cover parts of the aeration tanks.
South Treatment Plant	8/07/06	Complainant sensed strong odors along Grady Way and Oakesdale Avenue.	Upon investigation, the operators sensed a slight odor from the secondary treatment process (aeration tanks). No further action taken at this time. The complainant did not want to be contacted with the investigative results
South Treatment Plant	9/08/06	Complaint received on the Clean Air Agency Odor Hotline and relayed to the South Plant via agency inspector the day after.	Complainant sensed strong odors while driving along I-405. The source of the odor was most likely from the secondary treatment process, specifically from the aeration tanks. Other than a few minor process changes, the ability to control odors from this source is limited. An official memo was sent to the agency inspector and she was notified of the upcoming project to cover parts of the aeration tanks.
South Treatment Plant	9/26/06	Complainant sensed "rotten egg" odors in his car while driving north on Interurban Avenue, and later in his office.	An investigation revealed strong secondary odors outside the fenceline at the south side of the plant. One aeration tank was currently out of service and being hosed. At the time of the complaint, both Primary odor scrubber blowers were temporarily out of service for repairs. Prechlorination of the plant influent was increased and one of the primary odor blowers was placed back into service. The complainant did not want to be contacted.
South Treatment Plant	10/04/06	Complainant has sensed strong odors in his car while commuting. Areas he has sensed plant odors are I-405, Oakesdale Avenue to Longacres Way and the West Valley Highway. He didn't sense the odors at the time of the complaint, but called the plant to inform them about the odors. He stated that he has worked in the area for 22 years and the footprint of the odors has gotten much larger.	The only unusual plant activities that day were aeration tank #3 out of service (some odor sensed topside) and the pulling primary treatment area gates. No investigation was made since the odors were not sensed at the time of the complaint. Suspect that the aeration tanks were the cause of the odors. The complainant did not want to be contacted.
South Treatment Plant	10/24/06	Complainant as well as others sensed very strong odors outside their building complex, which is located just east of the plant on Oakesdale Avenue.	The source of the odor was a secondary sedimentation tank that had been collecting sludge and over time floated to the top. A shear pin to help drive the sludge collector broke and repairs could not be made immediately because there were no spare

Appendix N. 2006 Summary of Odor Complaints

Location	Date	Complaint	Resolution
			parts. The decision was made to drain the tank rather. While draining, granular hypochlorite and constant hosing was performed to minimize the odor impacts. The tank was totally drained on 10/26 and the odors ceased. The complainant did not want to be contacted.
South/East Service Area Offsite			
North Creek Force Main Discharge Structure	1/03/06	Odors sensed by landscaping business personnel adjacent to structure.	No odors sensed around the structure at the time of investigation. H2S readings from the NCFM exhaust stack was 0, 1, 1 ppb. Some of the contractors working at the station did not sense any odors at all, while some sensed a few whiffs of sewage. Reviewing the North Creek pump station trends, the flow through the station ramped up from 7.5 to 16.0 MGD at the time of the complaint, so it may be possible that there was a H2S surge through the carbon scrubber at the time the flow increased. Asked the complainant to call Renton Main Control rather than a specific staff person's phone since the main control phones are staffed at all times.
Heathfield Pump Station	6/07/06	Complainant sensed sewage odors in front of house.	The odors were emanating from a local manhole as well as the storm drain system of the pump station. All of the manholes within the vicinity were pressurized. The odor control unit was operating, with no sulfide coming out from the exhaust. However, the pressure drop across the carbon bed was high so a decision was made to change the carbon in the unit. Dataloggers were also placed in the wet well to measure pressure, as a negative pressure when opening the wet well door has not been as strong as in the past.
North Mercer Pump Station	4/03/06	Complainant has sensed odors from pump station for the last 4 years. She has never called but is concerned about odor problems this coming summer. She thinks that the odors are from two pipes directly from the station and consists of a "toilet smell".	She does not smell the odors now; it was information she wanted to pass along. No investigation made at the time of complaint.
South Mercer Pump Station	4/18/06	Complainant had sensed odors from pump station off and on for the past 3 weeks.	Construction work ongoing at pump station. Investigation revealed some H2S detected from the odor control unit exhaust, though no odors were sensed. The wet well door had been opened during a phase of work by the contractors. Operator will check station status the next morning. Portable carbon unit to arrive at station in 2 weeks. As a precaution, extra carbon (155 pounds) was added to the scrubber on 4/26.

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Location	Date	Complaint	Resolution
North Mercer Pump Station	4/24/06	Complainant sensed sewer odors from pump station the day before she filed complaint.	Since the complaint did not get reported until the day after, no same-day investigation was performed. No odors detected at station at the time of investigation. The Pepcon unit was operational, pH and ORP readings normal, but erratic and high H ₂ S measured from the exhaust (21 – 86 ppb).
South Mercer Pump Station	4/25/06	Complainant sensed sewage odors from the pump station.	Investigation found that the odor was from holes drilled in the wet well walls from construction activity at the station. The holes were sealed and the complainant informed.
Holmes Point Flushing Structure	6/07/06	Complainant sensed sewage odors near his house for the past few days.	Sewer odors were sensed upon investigation. The “dogs” were tightened on the hatch over the pipe and a work order written to have a new gasket installed to provide a better seal.
Vashon Treatment Plant	6/07/06	Complainant sensed very strong sewage “bowel movement” odors from her second floor apartment.	At the time of the complaint, the holding tank mixer and aerator were in service, both potential sources of odor. The operator went to complainant’s site and spoke with apartment manager, passed out KC odor pamphlets and informed him that KC is very concerned about odor issues and to call the plant if further odor complaints are sensed.
Holmes Point Flushing Structure	7/03/06	Sewer odors were sensed.	No odors sensed upon investigation but found two of the hatch rings loose. Retightened the two loose rings and ensured that the other rings were as tight as strength would allow.
York Force Main Discharge Structure	7/25/06	Complainant sensed strong “rotten-egg” odors outside his business.	The York Pump Station was taken out of service 4 days before the complaint was called in. The 30-inch force main was currently being drained of sewage at the time of the complaint. The sewage sat in the wet well during that time, thus increasing the sulfide levels and pressurized spikes that could have burned through the odor control carbon bed. The pump station is currently off line. When the station resumes and after the first flush, the carbon in the scrubber will be changed out and hypochlorite added to the sewage to reduce sulfides.
Sweyolocken Force Main Discharge Structure	7/26/06	City of Bellevue received calls concerning odors from the exit off I-405 and onto I-90.	The Phoenix odor control unit was operating at the time of the complaint, but high sulfide readings were measured from the exhaust. The unit was water recharging one of its canister banks at the time of investigation, thus limiting its full odor control capacity. The water regeneration cycle will be modified so recharging does not happen during the day but instead during a time when traffic and receptors are minimal. If odor complaints persist, then the canisters may need to be changed.
45 th Ave SW,	7/26/06	Received call from inspector of the	Investigation at the Barton pump station

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Location	Date	Complaint	Resolution
West Seattle		Puget Sound Clean Air Agency; complainant e-mailed her concerning sewer odors sensed near their residence (3 blocks from the Fauntleroy Ferry Dock) 5 days ago.	revealed no odors and very little sulfide measured from the scrubber exhaust. The ferry ticket takers did not notice any highly unusual odors the past week but stated that they thought the odors were from the low tides. There were 4 sewer manholes located within 50 feet of their residence but were not the county's. The complaint was designated as non King County.
Beach Dr. SW, manhole B-4	8/18/06	Complainant has complained about "seaweed" odors near her residence which is near Murray Pump Station.	Investigation found high sulfide reading emanating from the manholes along Beach Drive (B-5 and B-4). The manholes were sealed.
60 th Avenue and Spokane Street	9/13/06	Initial complaint phoned to WestPoint and was referred to the South Plant.	No odors sensed at the 63 rd Avenue Pump Station at the time of investigation, and no complaints from the residents of the house living next to the pump station. The odor control unit was in operation and no manholes in the area were emitting odors. Other residents nearby were contacted and they did not sense any odors. Designated as a non-county complaint.
SW Admiral Way	10/02/06	Complaint received on the Clean Air Agency Odor Hotline and relayed to the South Plant via agency inspector a few days after. Complainant sensed "chlorine" odors near her residence	The nearest KC facility is the Alki Stormwater Plant. The station has not been in operation since early 2006. The last hypochlorite delivery was in early August 2006 and Operation staff confirmed that no testing of the chlorination system had been performed lately. A check of the roof vents from the hypochlorite storage tank failed to come up with any odors. It was concluded that King County was not the source of the complaint and that the agency inspector was notified of the findings.
Corner of Rainier Avenue and Grady Way	11/25/06	Complainant sensed manure and rotten eggs odor at the corner of Rainier Avenue and Grady Way.	An immediate investigation around the plant was performed and no odors were detected outside the fence line. It was concluded that King County was not the source of the complaint, therefore designated as non-county. Tried to reach complainant by phone, but there was no answer.

Appendix O

The Health of Our Waters,
Water Quality Monitoring Results
for 2006

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This appendix presents a summary of the quality of King County's marine water and freshwater bodies in 2006. The summary is followed by more detailed information on water quality monitoring locations, procedures, and results. The information satisfies the RWSP reporting policies that call for inclusion of yearly water quality monitoring results as a part of the RWSP annual report.

Summary of 2006 Water Quality

Monitoring activities in 2006 found that in general, the quality of marine and fresh waters in King County is good.

With the exception of one site in Elliott Bay, all offshore marine monitoring locations in Puget Sound—both ambient and outfall sites—met fecal coliform bacteria standards in 2006. The percentage of nearshore marine sites (beaches) that met the standards has nearly doubled since 1998.¹ The two nearshore sites of highest concern are near freshwater sources—the mouth of the Lake Washington Ship Canal and a storm drain at Alki Point South. The overall quality of marine water, as indicated by the water quality index, is good. The percentage of monitoring locations ranked as moderate or high concern has declined to zero in the past three years, from a peak of 22 percent in 2000.

The quality of major lakes in King County, as indicated by fecal coliform bacteria levels, is also good. For non-beach areas, 100 percent of Lake Sammamish stations, 92 percent of Lake Washington stations, and 80 percent of Lake Union stations met the exceptionally high fecal coliform standard used for lake water. These percentages represent a slight decrease for Lake Washington from 2005 percentages because of higher bacteria levels at one station.

Bacterial counts in 2006 at all swimming beaches monitored in Lake Washington, Lake Sammamish, and Green Lake were within acceptable ranges and did not warrant swimming beach closures. Bacteria levels were low in Green Lake for the second year in a row. Lakes Washington and Sammamish remained fairly consistent, with slight variability from year to year. In terms of overall water quality, as measured by the Trophic State Index, Lakes Sammamish, Washington, and Union were ranked as moderate in 2006.

Given the large population and the growing urbanization in King County, overall stream water quality, as measured by the Water Quality Index for rivers and streams, is fairly good. In the 2005–2006 water year, water quality at 35 of the 56 sites (63 percent) were rated either low or moderate concern, while 21 sites (38 percent) were rated high concern. A comparison of 2006 data with historical data for 17 streams in King County suggest that increased urbanization has resulted in faster surface runoff and peak streamflow rise and fall than have previously occurred in these streams. These conditions can lead to flooding, channel erosion, and disturbance to organisms.

¹ About 75 percent of the marine beach sites met the geometric mean standard and about 50 percent met the peak standard for fecal coliform bacteria.

Monitoring Programs

To protect public health and its significant investment in water quality improvements, King County regularly monitors wastewater treatment plant effluent, marine waters, beaches, major lakes, and streams (Table O-1). The biological, chemical, and physical parameters used to assess a water body's health under Washington State Water Quality Standards are fecal coliform bacteria, dissolved oxygen, temperature, pH, ammonia, turbidity, and a variety of chemical compounds. King County also uses other indicators in addition to these parameters.

Treatment Plant Effluent

King County's three regional wastewater treatment plants continue to be in compliance with the terms and conditions of their NPDES permits, and so are in compliance with the Washington State Water Pollution Control Law, the Federal Water Pollution Control Act, and the Federal Clean Water Act.

The county regularly samples wastewater effluent from the plants and analyzes these samples at process laboratories at the plants and at its environmental laboratory in Seattle.

Ongoing Marine Monitoring

King County's marine monitoring program routinely evaluates nutrient, fecal coliform bacteria, dissolved oxygen, and stratification levels at offshore locations in the main basin of Puget Sound. Samples are collected near treatment plant and combined sewer overflow (CSO) outfalls to assess potential effects to water quality from wastewater discharges. Additional samples are collected at ambient locations to better understand regional water quality and to provide data needed to identify trends that might show impacts from long-term cumulative pollution.

Ongoing marine monitoring also includes fecal coliform bacteria monitoring of water at Puget Sound beaches near outfalls and at ambient locations and sediment quality monitoring near outfalls and at ambient locations.

Ongoing Freshwater Monitoring

The major lakes monitoring program collects samples from 25 open-water sites in Lake Union and the Ship Canal, Lake Washington, and Lake Sammamish. Sampled parameters include

Some water quality indicators...

Fecal coliform bacteria. The presence of fecal indicator bacteria indicates that the water has been contaminated with the fecal material of humans, birds, or other warm-blooded animals. One type of fecal indicator bacteria, fecal coliforms, may enter the aquatic environment from domestic animals, wildlife, stormwater runoff, wastewater discharges, and failing septic systems. Although these bacteria are usually not harmful, they often occur with other disease-causing bacteria and their presence indicates the potential for pathogens to be present and to pose a risk to human health.

Dissolved oxygen. Aquatic plants and animals require a certain amount of dissolved oxygen (DO) for respiration and basic metabolic processes. Waters that contain high amounts of DO are generally considered healthy ecosystems. DO concentrations are most important during the summer season when oxygen-depleting processes are at their peak.

Temperature. Temperature influences many of the chemical components of the water, including DO concentration. Temperature also exerts a direct influence on the biological activity and growth and, therefore, the survival of aquatic organisms. Temperature levels in waters that bear salmonids are also very important.

temperature, dissolved oxygen, pH, conductivity, clarity (Secchi Transparency), phosphorus, nitrogen, and fecal coliform bacteria.

The swimming beach monitoring program assesses 21 beaches on Lake Sammamish, Lake Washington, and Green Lake every summer. This effort, ongoing since 1996, tests for fecal coliform bacteria as an indicator of risk to human health.

The stream monitoring program targets rivers and streams that cross sewer trunk lines and those that are considered a potential source of pollutant loading to a major water body. This long-term program has sampled at 56 sites on four rivers and twenty-eight streams for many years.

Other Monitoring

In addition to ongoing water and sediment quality monitoring, the county conducts special intensive investigations. Currently, studies are under way to understand water quality issues and needs, to project future growth impacts, and to identify any needed improvements to salmon habitat in the two primary watersheds in King County. Other studies are under way to support decision-making, siting, and construction of wastewater capital projects.

Web-Based Monitoring Data

In 2006, King County's regional data management program continued to upgrade the methods used to store and disseminate monitoring data. This program is intended to allow the public to directly download substantial amounts of data from the Web, instead of requesting data from county staff.

The Swimming Beach monitoring page was upgraded to provide tables, graphs, and maps of monitoring results as they become available each week and to provide the most current information on beach closures. The Swimming Beach page is found at <http://dnr.metrokc.gov/wlr/waterres/swimbeach/default.aspx>.

The Large Lakes, Streams, and Marine Monitoring pages were upgraded to provide additional tables and graphs of monitoring results as they become available each month. These pages continue to allow for direct data download from the Web. Page locations are as follows:

- Large Lakes Monitoring page: <http://dnr.metrokc.gov/wlr/waterres/lakes/index.htm>
- Streams Monitoring page: <http://dnr.metrokc.gov/wlr/waterres/streamsdata/>
- Marine Monitoring page: <http://dnr.metrokc.gov/wlr/waterres/marine/Index.htm>.

The Streamflow monitoring page was upgraded to improve data presentation and data download ability. This page is found at <http://dnr.metrokc.gov/wlr/waterres/hydrology/>.

Table O-1. Summary of King County Water Quality Monitoring Programs

Program	Media and Locations	Parameters	Methods	Sampling Frequency	Program Purpose	Duration
Ambient Monitoring						
Marine monitoring	Water and sediments in areas of Puget Sound away from outfalls and CSOs; shellfish and algae from Puget Sound beaches	Water samples: temperature, salinity, clarity, DO, nutrients, chlorophyll, and bacteria Shellfish: lipids and metals	Water samples collected at multiple depths, ranging from 1 to 200 m Sediments and shellfish	Water samples: monthly Shellfish: annually; sediments: bi-annually	To assess potential effects to water quality from nonpoint pollution sources and to compare quality against point source data	Ongoing
Major lakes monitoring	Cedar-Sammamish Watershed (WRIA 08) only: Lakes Washington, Sammamish, and Union	Temperature, DO, pH, conductivity, clarity, phosphorus, nitrogen, and fecal coliform; microcystin is measured at select stations	Samples collected every 5 m from 1 m below the surface to bottom at one station in center of lake and from the surface around various locations around the shoreline	Biweekly during the growing season; monthly during the rest of the year	To monitor the integrity of the wastewater conveyance system and the condition of lakes	Ongoing
Small lakes monitoring	Volunteers monitor 51 small lakes in King County	Precipitation, lake level, temperature, Secchi depth, phosphorus, nitrogen, chlorophyll-a, phytoplankton	Single-point and vertical profiles	Rainfall & lake level: daily Temperature & Secchi depth: weekly Other parameters: every 2 weeks April to October	To characterize and identify trends in water quality	Ongoing

BMP = best management practices; BOD = biochemical oxygen demand; DNR = Washington State Department of Natural Resources; DO = dissolved oxygen; Ecology = Washington State Department of Ecology; HPA = Hydraulic Permit Approval; SAP = sampling and analysis plan; TMDL = total maximum daily load; TOC = total organic carbon; TSS = total suspended solids.

Table O-1. Summary of King County Water Quality Monitoring Programs

Program	Media and Locations	Parameters	Methods	Sampling Frequency	Program Purpose	Duration
Rivers and streams monitoring	Rivers and streams of both watersheds; emphasis on those that cross wastewater conveyance lines or that could be a source of pollution	Baseflow and storm samples: turbidity, TSS, pH, temperature, conductivity, DO, nutrients, ammonia, bacteria Storm samples: trace metals Sediment quality at selected stations	Various	Monthly sampling under baseflow conditions; three to six times per year at mouth of streams under storm conditions	To monitor the integrity of the wastewater conveyance system and the condition of streams and rivers	Ongoing
Swimming beach monitoring	Cedar-Sammamish Watershed: Lake Washington, Lake Sammamish, and Green Lake	Bacteria	Water samples at swimming beaches	Summer	To evaluate human health risks and necessity for beach closures	Ongoing
Benthic macroinvertebrate monitoring	Wade-able stream sub-basins	Size and distribution of aquatic macroinvertebrate populations	Samples collected with a Surber stream bottom sampler	Annually	To establish a baseline for identifying long-term trends	Ongoing
Wastewater Treatment Plant Outfall Monitoring						
Marine wastewater plant outfall water column and beach monitoring	Puget Sound water column at treatment plant outfalls; water and shellfish at beaches near outfalls	Water samples: temperature, salinity, clarity, DO, nutrients, chlorophyll, and bacteria Shellfish: lipids and metals	Water samples at outfalls collected at multiple depths, ranging from 1 to 200 m Shellfish	Water samples: monthly Shellfish: annually	To assess potential effects to water quality from wastewater discharges	Ongoing
Marine NPDES sediment monitoring	Sediments in Puget Sound near treatment plant outfalls and the Denny Way CSO	Grain size, solids, sulfides, ammonia-nitrogen, oil & grease, TOC, metals, organic compounds, and (at South and West Point plants) benthic infauna	Sediment samples in a grid pattern as defined in the SAP approved by Ecology	Sediment samples at outfalls once per permit cycle (about every 5 years)	NPDES permit requirement	Ongoing

BMP = best management practices; BOD = biochemical oxygen demand; DNR = Washington State Department of Natural Resources; DO = dissolved oxygen; Ecology = Washington State Department of Ecology; HPA = Hydraulic Permit Approval; SAP = sampling and analysis plan; TMDL = total maximum daily load; TOC = total organic carbon; TSS = total suspended solids.

Table O-1. Summary of King County Water Quality Monitoring Programs

Program	Media and Locations	Parameters	Methods	Sampling Frequency	Program Purpose	Duration
Special Studies						
Sammamish-Washington Analysis and Modeling Project (SWAMP)	Water and sediments in major lakes and their inflowing streams	Broad spectrum of water quantity and quality, sediment quality, biological, and physical parameters	Various	1999–2003	To develop a computer model of the watershed	Completed in 2006
Ecological and Human Health Risk Assessment	Water bodies in Cedar-Sammamish watershed	Existing water, sediment, and tissue data	Various, using a tiered approach	Using existing data from other sampling efforts	To assess sampling program adequacy based on potential for chemicals to pose risks to aquatic life, wildlife, or human health	Completed in 2006
Green-Duwamish Water Quality Assessment (G-DWQA)	Water in Green and Duwamish Rivers and their inflowing rivers and streams	Broad spectrum of water quantity and quality, biological, and physical parameters	Various	Intensive	To develop models, evaluate BMPs, prepare risk assessments	Completed in 2006
Storm Impact Water Quality Monitoring	Water in Green and Duwamish Rivers and their inflowing rivers and streams under storm flow conditions	Broad spectrum of water quantity and quality, sediment quality, biological, and physical parameters	Various	Intensive	To evaluate conditions and to support modeling and WRIA planning	Completed in 2003; report issued in 2004
Loadings Calculations	Water in Green and Duwamish Rivers and their inflowing rivers and streams	Broad spectrum of water quantity and quality, sediment quality, biological, and physical parameters	Estimates based on water quality data and on literature reviews for land use classifications		To estimate chemical loading to surface waters	Completed in 2006

BMP = best management practices; BOD = biochemical oxygen demand; DNR = Washington State Department of Natural Resources; DO = dissolved oxygen; Ecology = Washington State Department of Ecology; HPA = Hydraulic Permit Approval; SAP = sampling and analysis plan; TMDL = total maximum daily load; TOC = total organic carbon; TSS = total suspended solids.

Table O–1. Summary of King County Water Quality Monitoring Programs

Program	Media and Locations	Parameters	Methods	Sampling Frequency	Program Purpose	Duration
Temperature and DO Studies	Water in Green and Duwamish Rivers and their inflowing rivers and streams	Daily fluctuations in temperature and DO, especially in the summer	Continuously recording data loggers	Intensive	To evaluate conditions and to support modeling and WRIA planning	Completed in 2003; temperature report issued in 2004; DO report completed in 2006
Microbial Source-Tracking Study	Green River and its tributaries	Land uses and bacterial sources associated with bacterial populations		Intensive	To assist in setting and measuring TMDLs	Completed in 2004; report completed in 2006
Brightwater Outfall Studies	Water, sediment, and eelgrass for the Brightwater outfall site Upland soils at outfall Portal 19	Water quality: temperature, salinity, DO, nutrients, and fluorescence Sediments: benthic community and chemistry	Water column samples and continuous buoy readings Surface sediments Eelgrass survey	Annual	Regulatory—to meet HPA and DNR outfall lease requirements	Through 2014
Brightwater Construction NPDES Stormwater Monitoring	Stormwater and surface water	Stormwater quality	Various	Intensive	To meet NPDES Construction Stormwater permit	Through 2010
Denny Way/Lake Union pre-remediation sediment monitoring	Sediment near the Denny Way and Lake Union CSOs	Benthic communities, sediment chemistry	Sediment samples per approved SAP	Variable	Regulatory—under a NOAA Fisheries Section 7 ESA consultation	Through 2021
Diagonal/Duwamish post-remediation sediment monitoring	Sediments near the Seattle Diagonal storm drain (includes city and county CSO) and the county's Duwamish CSO	Sediment chemistry, turbidity, cap surveys	Sediment samples per approved SAP	Annual	Regulatory—under an EPA/Ecology Consent Order	Through 2013

BMP = best management practices; BOD = biochemical oxygen demand; DNR = Washington State Department of Natural Resources; DO = dissolved oxygen; Ecology = Washington State Department of Ecology; HPA = Hydraulic Permit Approval; SAP = sampling and analysis plan; TMDL = total maximum daily load; TOC = total organic carbon; TSS = total suspended solids.

Marine Waters

This section describes the results of marine monitoring activities in 2006. The discussion includes fecal coliform bacteria levels and overall water quality rankings (water quality index). It also includes a discussion of additional sediment sampling and analysis conducted at the West Point Treatment Plant outfall in support of NPDES permit requirements.

Monitoring Locations

Figures O–1 and O–2 show ambient and outfall monitoring locations in Puget Sound. Ambient sites are chosen to reflect general environmental conditions. Outfall monitoring sites are located at King County wastewater treatment plant and CSO outfalls. Both offshore and nearshore (beach) areas are monitored.

Fecal Coliform Bacteria

Offshore Ambient and Outfall Locations

Levels of fecal coliform bacteria at offshore Puget Sound locations are measured to gauge the risk posed to human health from recreational uses of these waters. For marine surface waters, the current fecal coliform standards are a geometric mean standard of 14 colony forming units (cfu)/100 mL and a peak standard of no more than 10 percent of the samples used to calculate the geometric mean to exceed 43 cfu/100 mL. All 15 ambient and outfall sites met the fecal coliform standards in 2006, with the exception of one ambient site along the Seattle waterfront. Bacteria levels tend to be higher in Elliott Bay than at other sites because of freshwater input from the Duwamish River and stormwater outfalls. The two sites in Elliott Bay that are offshore of the waterfront met the standards, while the site just offshore of the seawall, which receives greater freshwater input, failed both the geometric mean and peak standards.

Nearshore (Beach) Ambient and Outfall Locations

Fecal coliform bacteria levels in Puget Sound beach locations are measured to assess the health effects from direct contact with marine waters during activities such as swimming, wading, SCUBA diving, and surfing.

In 2006, 15 Puget Sound beach sites were monitored monthly for fecal coliform bacteria. The results show that 8 of the 15 sites met both the geometric mean and peak standards, 5 sites met the geometric mean standard but not the peak standard, and 2 sites met neither standard (Figure O–3). The greatest determination of compliance with bacteria standards tends to be proximity to a freshwater source. The two sites that failed both standards in 2006 are near freshwater sources: a storm drain in the south Alki area and the mouth of the Lake Washington Ship Canal. These sites also failed these standards in the previous few years. All beaches in the vicinity of an outfall met fecal coliform standards in 2006. The percentage of Puget Sound beach sites meeting fecal coliform standards in 2006 has almost doubled since 1998. Fluctuations in water quality over time are most likely caused by annual variability in amount and intensity of rainfall. For example, 1996 through 1999 were substantially wetter than average years and may have caused the higher fecal coliform levels in 1998 and 1999.

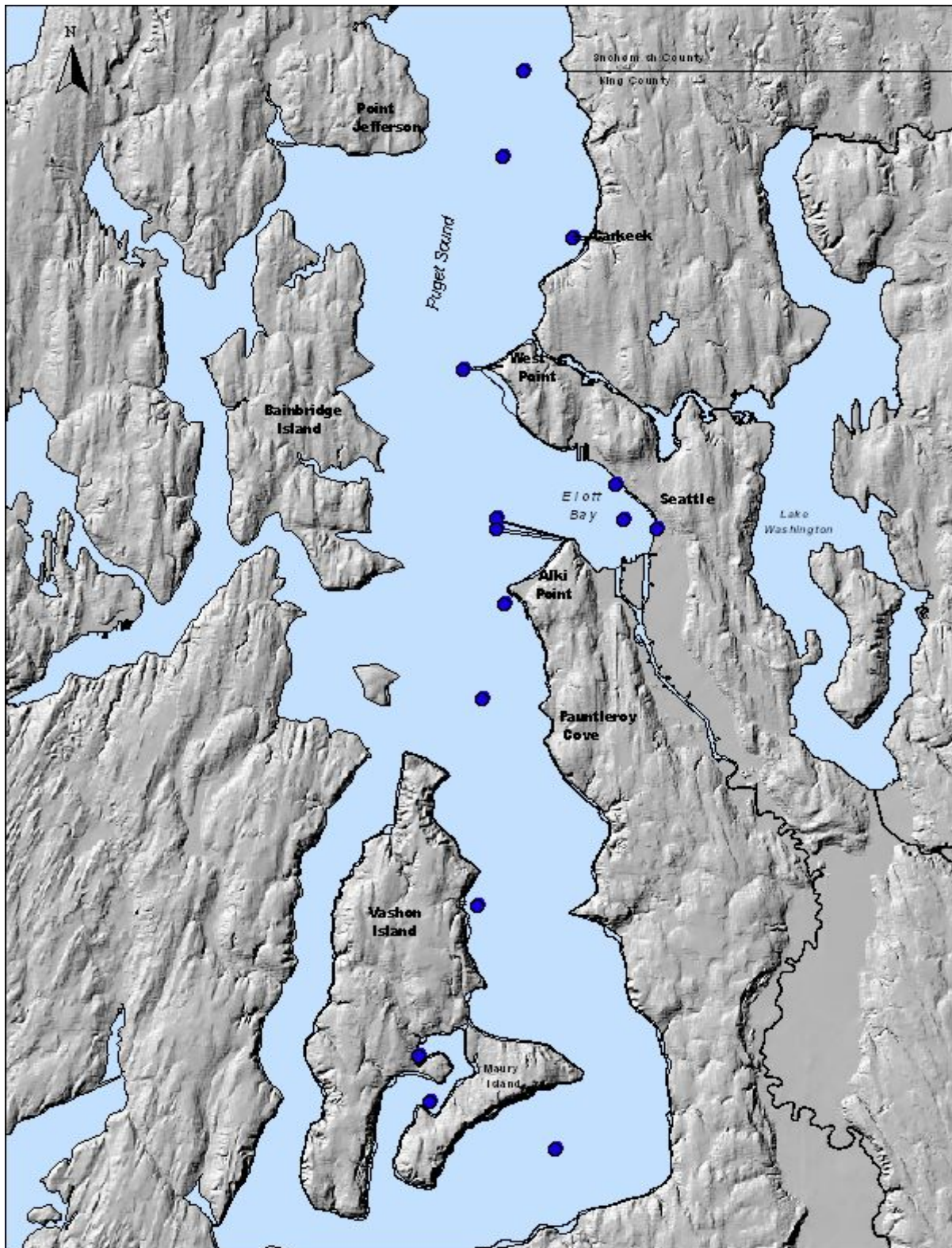


Figure O-1. Offshore Ambient and Outfall Monitoring Locations in Puget Sound

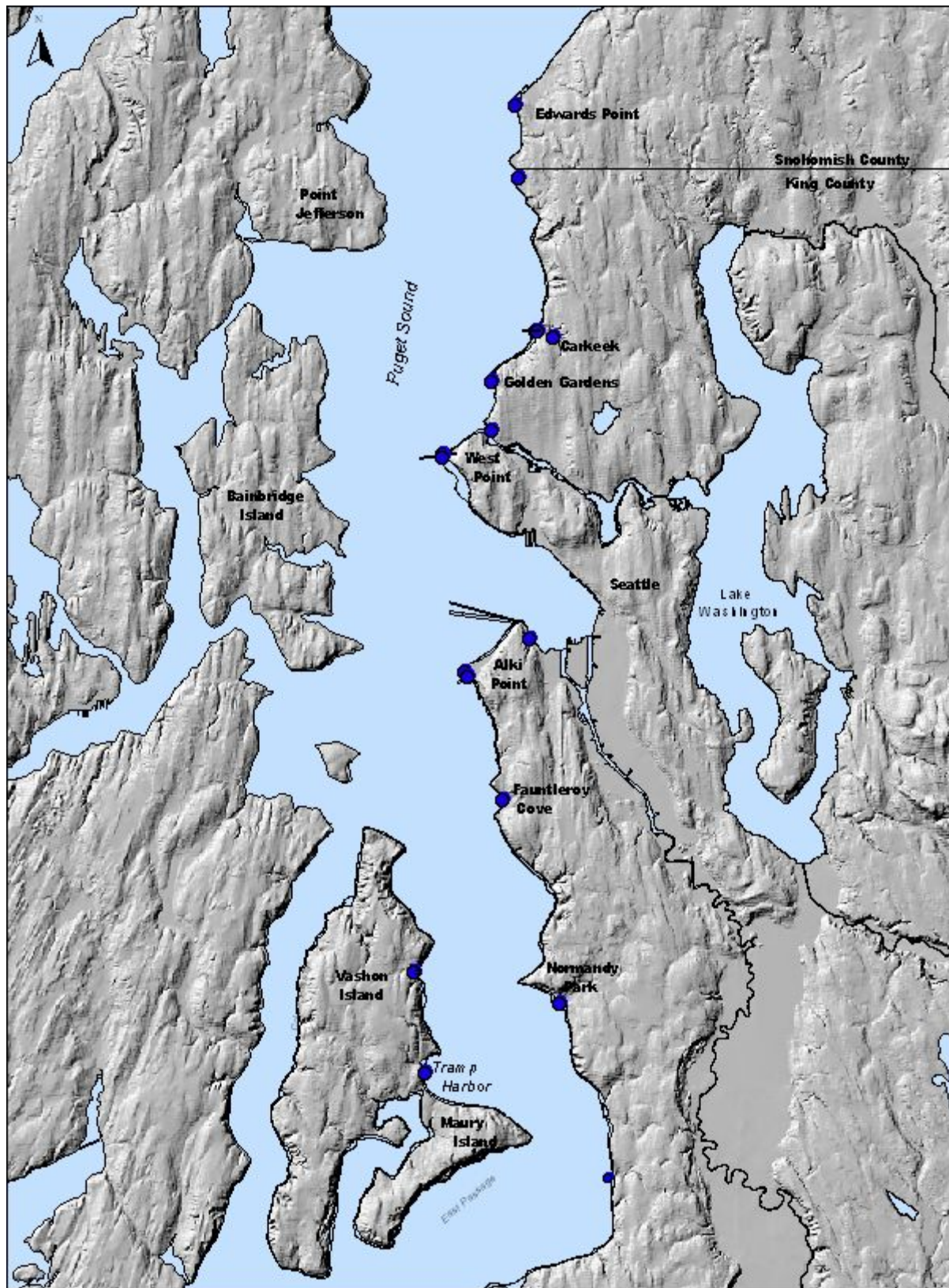


Figure O-2. Nearshore (Beach) Ambient and Outfall Monitoring Locations in Puget Sound

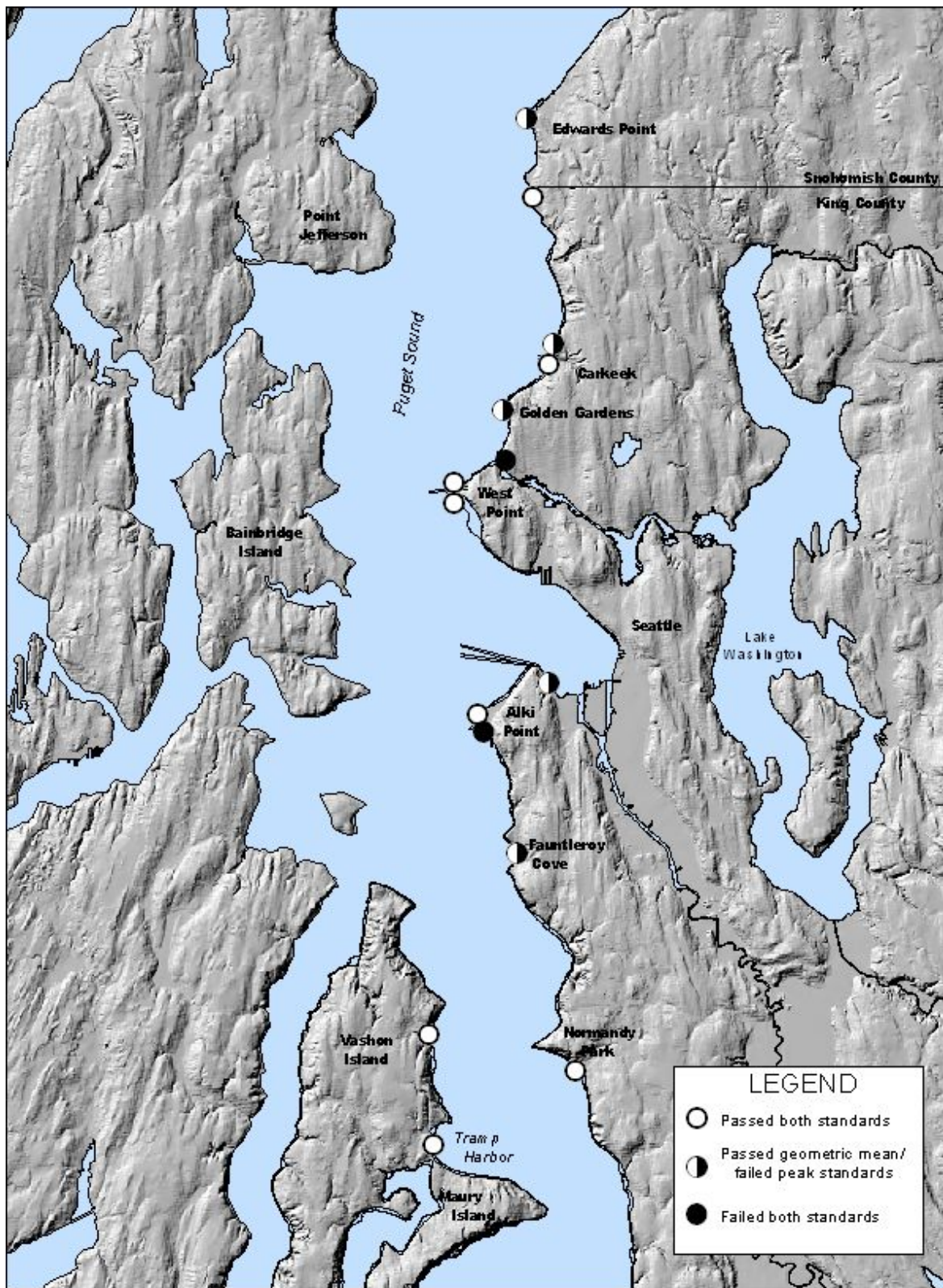


Figure O-3. Pass-Fail Status of Puget Sound Beach Monitoring Sites for Fecal Coliform Bacteria Standards, 2006

Overall Quality—Marine Offshore Water Quality Index

King County uses a modified version of the water quality index developed by the Washington State Department of Ecology to assess overall quality of offshore marine water. The determination is based on four indicators: dissolved oxygen (DO), dissolved inorganic nitrogen (DIN), ammonia, and stratification strength and persistence. Each location is categorized as low, moderate, or high concern.

The 2006 findings indicate that the water quality at all of the ambient and outfall offshore stations is at a level of low concern. Although five stations located throughout the Central Basin experienced strong-intermittent stratification, low DO levels were not observed. No stations experienced persistent stratification in 2006.² Figure O-4 shows the percentage of the 12 offshore stations categorized as moderate or high concern between 1999 through 2006. The percentage of stations of moderate or high concern reached a maximum in 2000 (22 percent) and has declined to zero percent for the past three years.

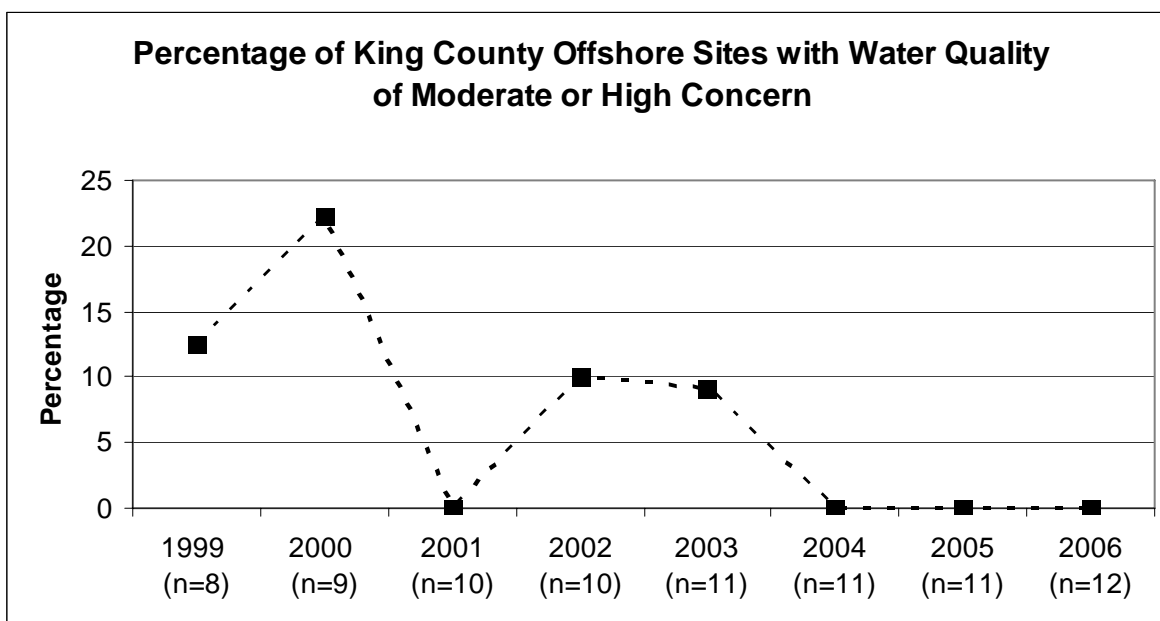


Figure O-4. Percentage of King County Offshore Stations with Moderate or High Concern Rankings Based on Water Quality Index, 1999–2006

Sediment Quality near West Point Outfall

In 2006, King County collected sediment samples in the vicinity of the West Point Treatment Plant marine outfall to meet NPDES permit requirements. Nineteen surface sediment samples were collected in September 2006 for analysis of chemical parameters including sediment

² Areas where persistent stratification occurs may be susceptible to nutrient loading and low DO problems.

conventionals, metals, and trace organics. A subset of these samples were submitted for toxicity testing and benthic community analysis. All analyses have been completed and the data are currently being evaluated and prepared for reporting.

Major Lakes

This section describes the results of fecal coliform bacteria sampling in ambient and swimming beach locations in the major lakes in King County. It also describes overall water quality in these lakes based on calculation of their Trophic State Index.

Monitoring Locations

Figure O-5 shows the 25 ambient sampling locations in Lakes Washington, Sammamish, and Union and in the Ship Canal. Figure O-6 shows the 21 swimming beach sampling locations in Lake Washington, Lake Sammamish, and Green Lake.



Figure O-5. Ambient Monitoring Locations in Lakes Washington, Sammamish, and Union (including the Ship Canal)

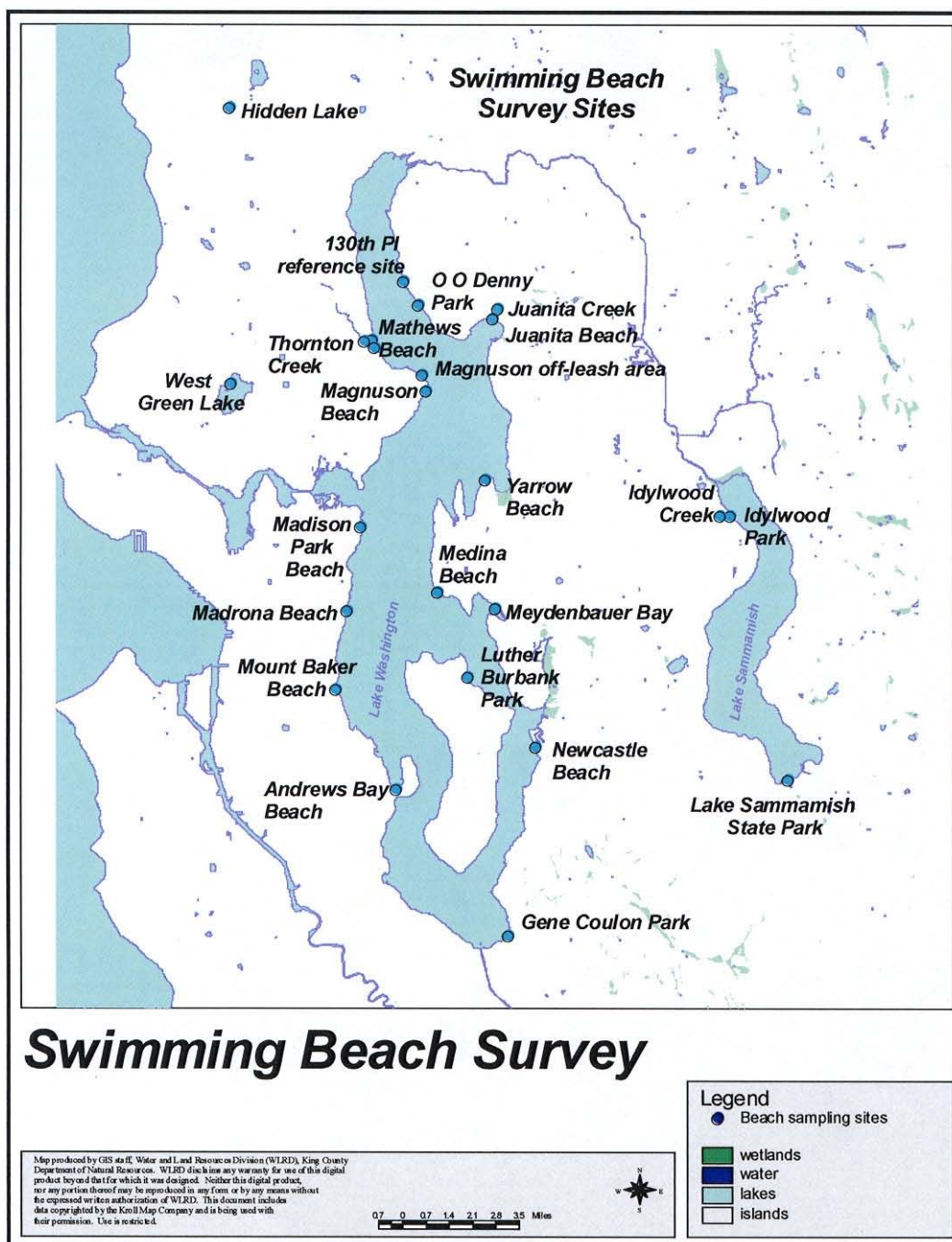


Figure O-6. Swimming Beach Monitoring Locations in Lake Washington, Lake Sammamish, and Green Lake

Fecal Coliform Bacteria—Ambient Mid-Lake (Open-Water) and Nearshore

The lake standard for fecal coliform bacteria addresses human health risk resulting from direct contact with the water during activities such as swimming and wading. The standard is a geometric mean value of less than 50 colonies/100 mL with no more than 10 percent of all samples obtained for calculating the geometric mean value exceeding 100 colonies/100 mL (WAC 173-201A). Sites used for this indicator are located in both mid-lake (open water) and nearshore locations. The indicator is based on data from routine monitoring at these sites and does not include sampling done in conjunction with emergency overflow events.

Even though this measure uses a standard that is exceptionally difficult to attain, 100 percent of the Lake Sammamish stations, 92 percent of the Lake Washington stations, and 80 percent of the Lake Union stations achieved this standard in 2006 (Figure O–7). Lake Washington showed a decrease of 8 percent from 2005 because of higher bacteria at one station (4903).

In 2006, roughly half of the samples that had higher fecal coliform levels were the result of unusual storm conditions with the highest bacteria concentrations collected in November directly after record-breaking rainfalls hit the region. Lower percentages in Lake Union are due to the influence of CSO and stormwater outfalls into the lake.

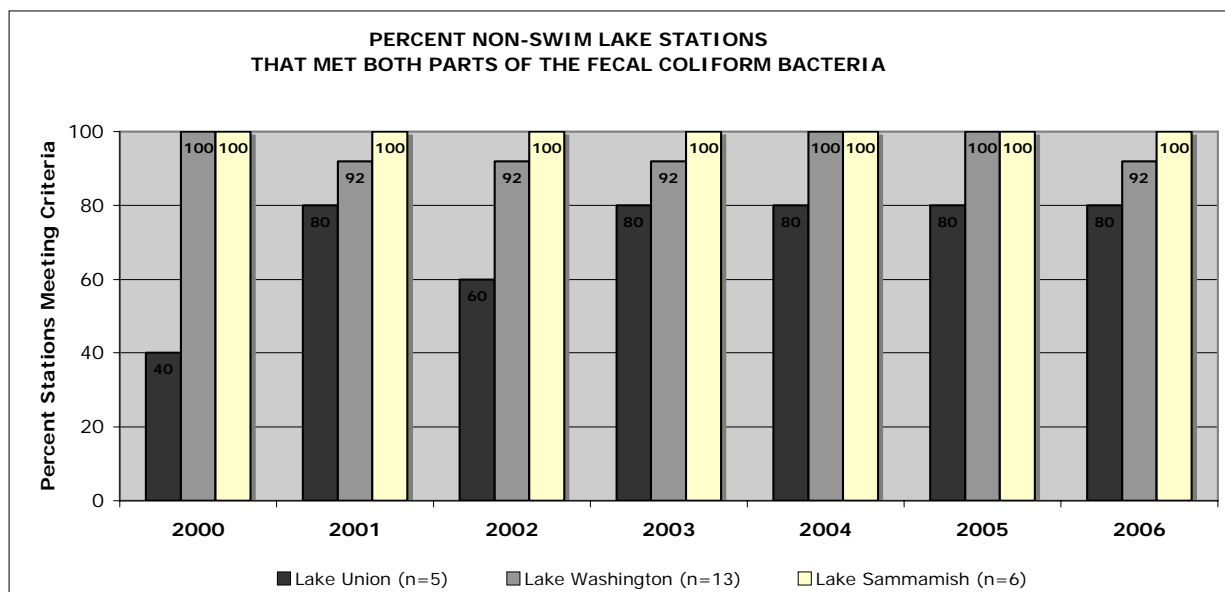


Figure O–7. Percentage of Ambient Stations in Lakes Washington, Sammamish, and Union that Met the Fecal Coliform Bacteria Standard, 2000–2006

Fecal Coliform Bacteria—Swimming Beaches

King County’s standard for acceptable fecal coliform bacteria levels in swimming beaches is less than 200 colonies/100 mL in any sample. Public Health–Seattle & King County and the Washington State Department of Health currently use this standard, which is called the Ten State Standard.

Bacterial counts for all beaches monitored in all three lakes were within acceptable ranges and did not warrant swimming beach closures. All samples collected at Green Lake met the fecal coliform standard for the third year in a row (Figure O–8). Between 1998 and 2006, levels at swimming beaches in Lakes Sammamish and Washington remained fairly consistent, with slight variability from year to year (Figures O–9 and O–10). In Lake Sammamish, 89 percent of the samples collected in 2006 met the standard, down slightly from 2005 (90 percent). In Lake Washington, 88 percent of the samples met the standard, the same percentage as in 2005.

Overall Quality in Major Lakes—Trophic State Index

Overall water quality in Lakes Washington, Sammamish, and Union is determined by measuring the summer total phosphorus concentrations and converting them to the Trophic State Index (TSI-TP). The Trophic State Index relates phosphorus to the amount of algae that the lake can support. The potential for nuisance algal blooms is considered low if the TSI-TP is less than 40, moderate if less than 50, and high if greater than 50. High algae productivity often relates to poor water quality. Although such high productivity may not reduce beneficial uses in all cases, depending on the natural condition of the lake, a trend toward increased TSI-TP could indicate changes in the watershed.

Water quality in these lakes varies annually, depending on watershed inputs, weather, and biological interactions. The 1994–2006 results for these three lakes show the values fluctuating across the low-to-moderate threshold, indicating that the water quality varies from good to moderate (Figure O–11). In the past eight years, Lake Union typically has fallen in the moderate range, Lake Washington in the low range, and Lake Sammamish in both ranges.

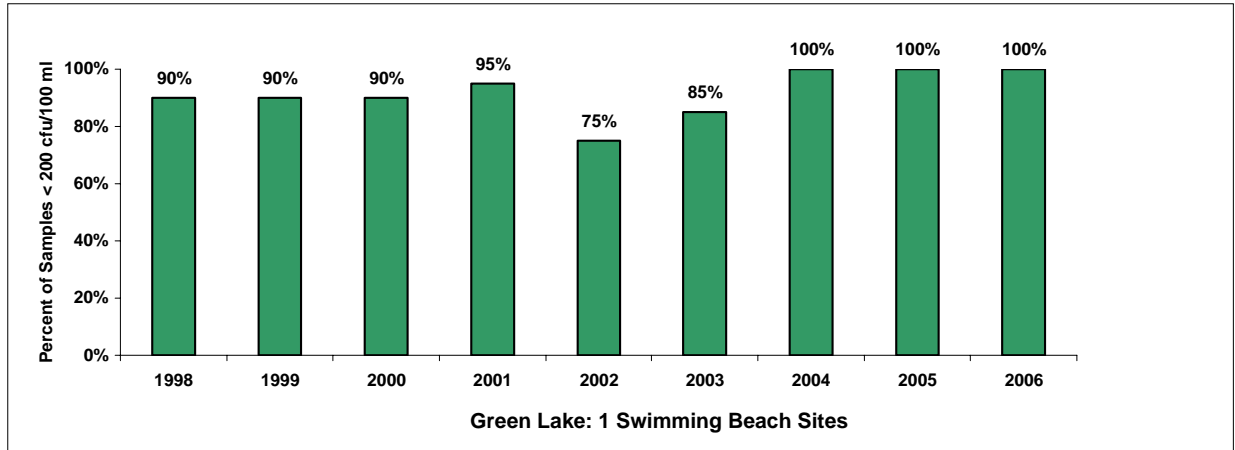


Figure O–8. Percentage of Samples that Met the Fecal Coliform Bacteria Standard at Green Lake Swimming Beaches, 1998–2006

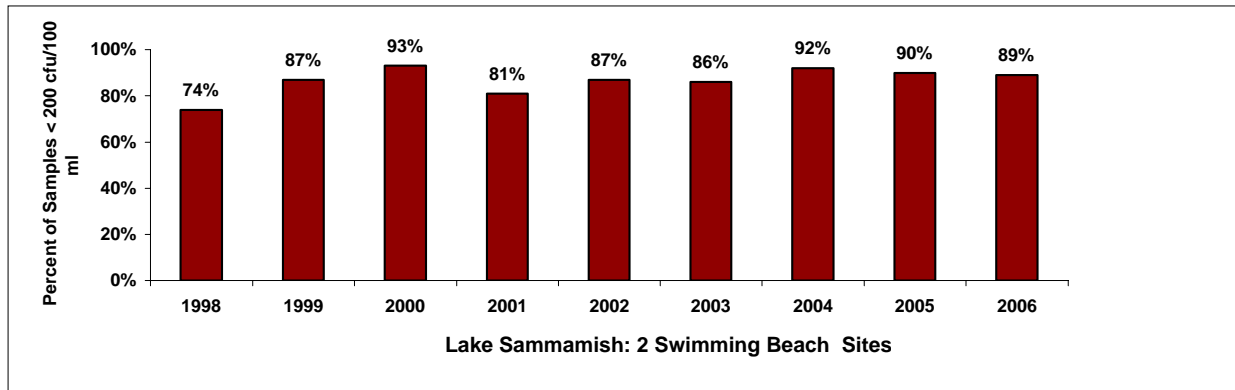


Figure O–9. Percentage of Samples that Met the Fecal Coliform Bacteria Standard at Lake Sammamish Swimming Beaches, 1998–2006

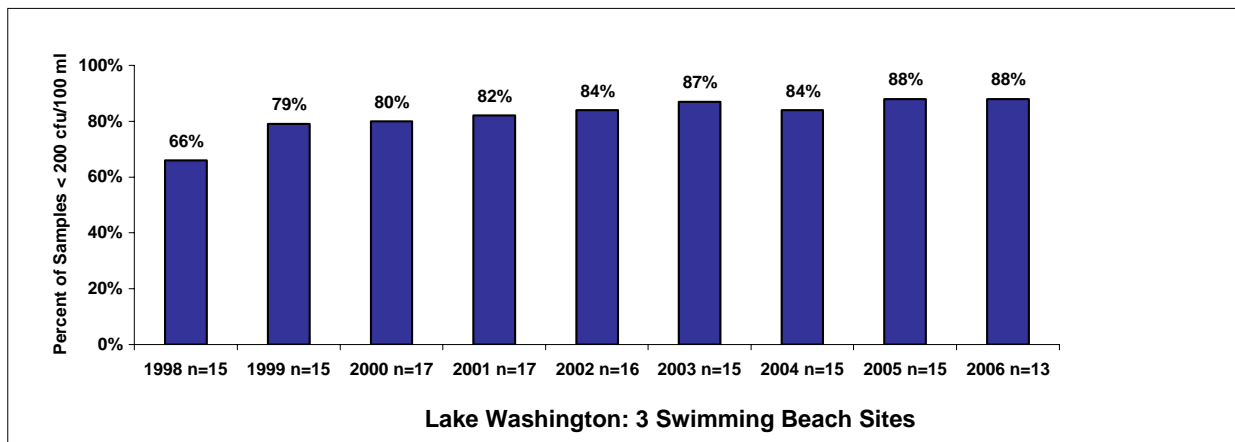


Figure O–10. Percentage of Samples that Met the Fecal Coliform Bacteria Standard at Lake Washington Swimming Beaches, 1998–2006

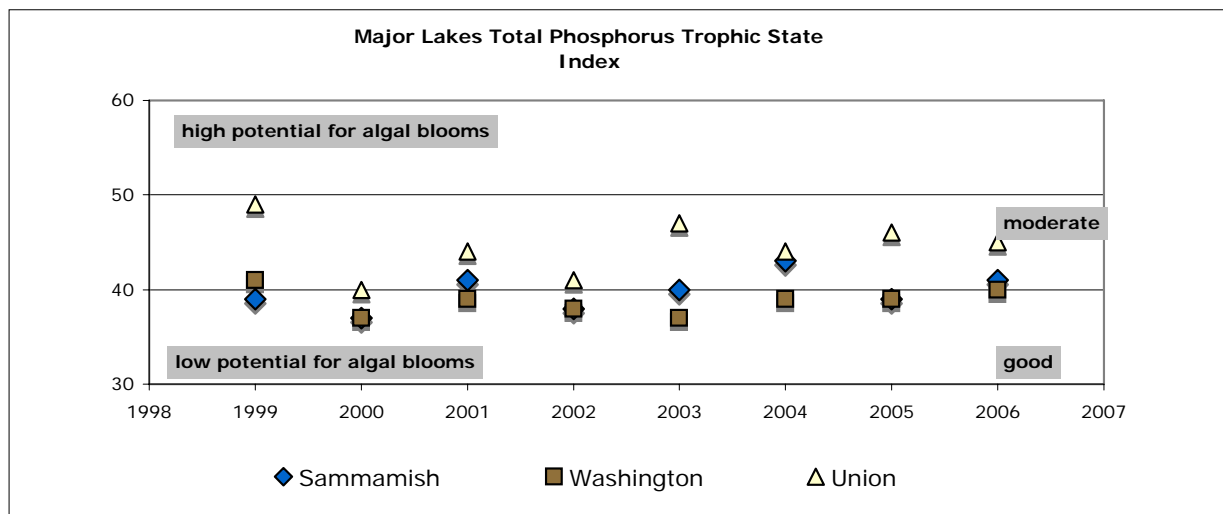


Figure O–11. Overall Water Quality in Lakes Washington, Sammamish, and Union Based on Trophic State Index, 1999–2006

Water Temperature—Effects of Climate Change

Global climate change is having an impact on our local weather patterns and subsequently on county aquatic resources. On average, ambient air temperatures in the Pacific Northwest have increased over the twentieth century by roughly 1.5°F.³ Air temperatures in the region are expected to continue to increase by another 2 to 9°F over the next 80 years.

Warmer temperatures have reduced the snow pack levels in Washington and, thus, the timing and quantity of flows in regional rivers and streams. Higher air temperatures and changes in wind patterns also increase lake temperatures through surface heat exchange processes. January water temperatures are taken at a 1-meter depth from the mid-lake monitoring stations in Lakes Washington, Sammamish, and Union (Figure O–12). Because the lakes are well mixed during January, temperatures at the surface reflect the temperatures throughout the water column.

The University of Washington has measured temperatures in Lake Washington since 1960. King County (then Metro) began monitoring temperatures in Lakes Washington, Sammamish, and Union in 1979. Additional Lake Washington data were collected in 1913 and 1933. Lake temperatures vary annually, depending on seasonal weather conditions (wind, precipitation, cloudiness, ambient air temperatures). Overall, winter water temperatures have increased about 0.25°C (0.45°F) per decade since 1960 in Lake Washington and about 1°C (1.8°F) per decade since 1979 in Lakes Sammamish and Union. The smaller increase in Lake Washington is likely due to its larger volume, which is roughly 8 times greater than Lake Sammamish and 118 times greater than Lake Union.

³ <http://www.cses.washington.edu/cig/pnwc/pnwc.shtml>

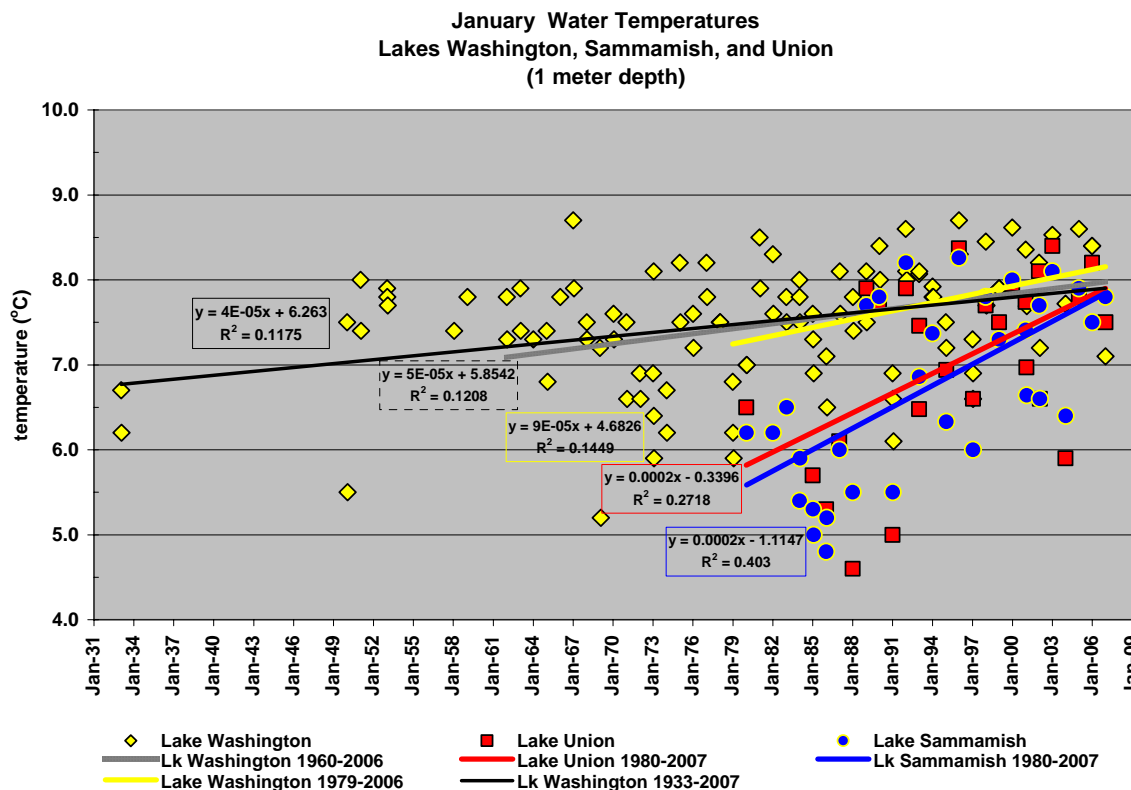


Figure O–12. January Water Temperatures in Lakes Washington, Sammamish, and Union, 1933-2007

Rivers and Streams

This section describes the quality of water in King County rivers and streams in terms of overall water quality (Water Quality Index) and normative streamflows.

Monitoring Locations

Fifty-six sites in rivers and streams in Water Resource Inventory Areas (WRIAs) 8 and 9 (Cedar-Sammamish and Duwamish-Green watersheds) have been sampled monthly, some for over 30 years, for numerous water quality parameters, including those used to determine the Water Quality Index (Figure O–13).

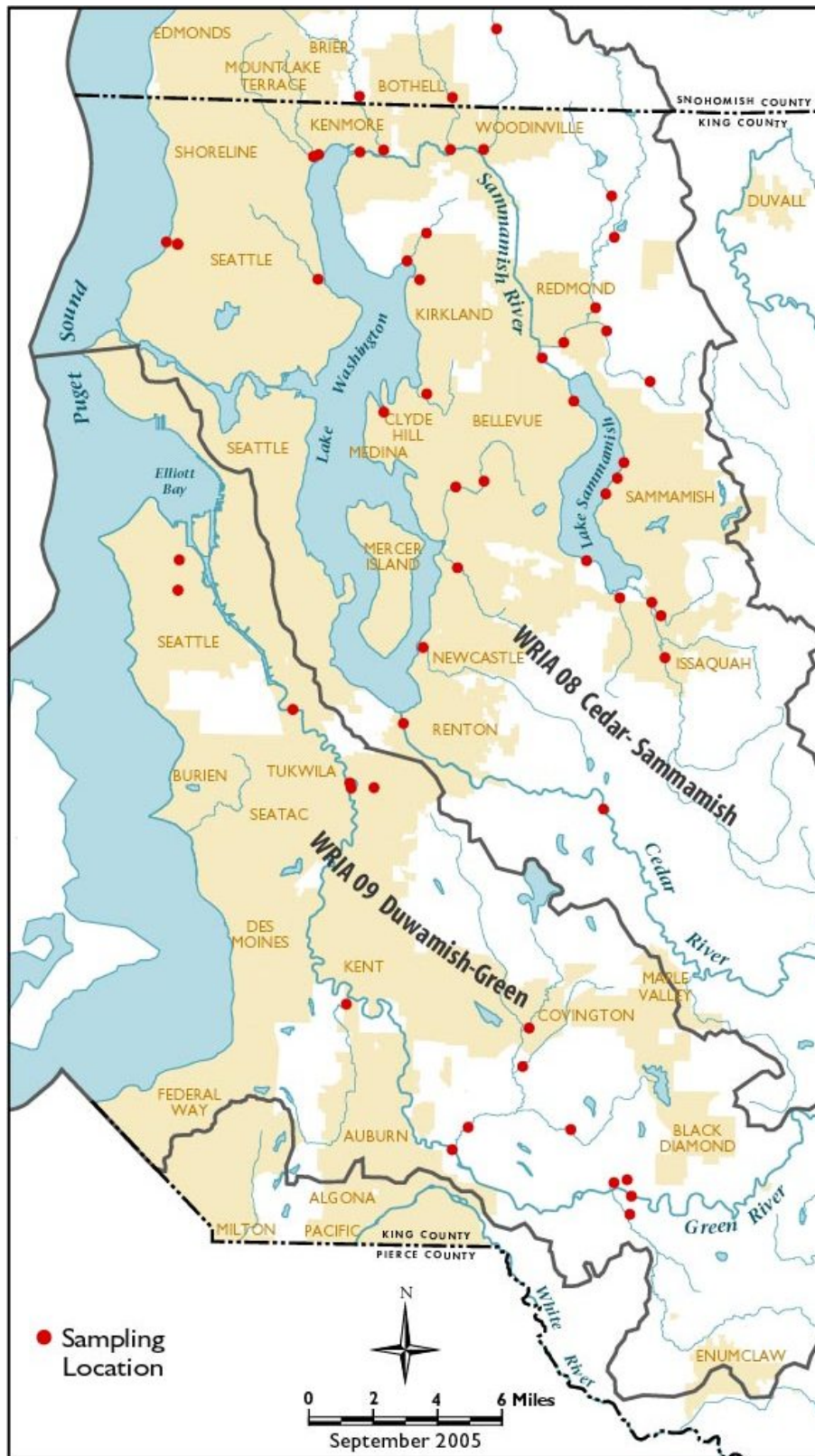


Figure O-13. River and Stream Monitoring Locations

Overall Quality—Water Quality Index

The Water Quality Index (WQI) for rivers and streams attempts to integrate a series of key water quality indicators into a single number that can be used for comparison over time and among locations. The WQI is based on a version proposed by the Washington State Department of Ecology and originally derived from the Oregon Water Quality Index. The WQI is a number ranging from 10 to 100—the higher the number, the better the water quality. For temperature, pH, fecal coliform bacteria, and dissolved oxygen (DO), the index expresses results relative to state standards required to maintain beneficial uses. For nutrient and sediment measures, where the state standards are not specific, results are expressed relative to expected conditions in a given eco-region. Multiple constituents are combined, results are aggregated over time to produce a single score, and a rating of low, moderate, or high concern is assigned for each sampling station.

Given a population of almost two million residents and the intense urbanization of the area, overall stream water quality in King County is fairly good. Water quality at 35 of the 56 sampled sites (63 percent) during the 2005–2006 water year were considered good to moderate water quality, with either low concern or moderate concern ratings, while 21 sites (37 percent) were rated high concern because of serious water quality concerns (Figure O–14).

In WRIA 9, four of the sixteen sites were rated of low concern, ten sites were of moderate concern, and two sites were of high concern (Figure O–15). Of the forty sites in the WRIA 8, one site rated of low concern, nineteen sites were of moderate concern, and twenty were of high concern (Figure O–16). Overall, high-concern ratings at all high-concern sites were, at least in part, a result of excessive nutrients (nitrogen and/or phosphorus). In addition, high bacteria levels at four sites and low DO concentrations at six sites contributed to the overall high-concern ratings. None of the high-concern sites were the result of high temperatures.

While cumulative rainfall in 2006 was average compared to historical values, the summer (mid-June to mid-Sept) was the second driest on record. This dry summer was followed by record-breaking precipitation in November and severe windstorms in December. Flooding and high stormwater flows contribute to poor water quality in a variety of ways.

Fecal coliform bacteria enters the aquatic environment from household or farm animals, wildlife, stormwater runoff, untreated wastewater effluent, wastewater overflows, and failing septic systems. Poor livestock management practices and failing septic systems can be a potential source of bacteria in agricultural and in suburban areas. Wildlife and stagnant water conditions in wetlands can lead to elevated bacteria counts. Elevated phosphorus concentrations are often linked to similar sources as bacteria because high phosphorus concentrations are found in fecal material. Elevated phosphorus concentrations are also linked to areas undergoing development.

Low DO concentrations can be associated with low flows, high temperatures (colder water holds more oxygen), and high levels of organic matter (bacteria use up oxygen in the process of decomposition).

Normative Streamflows

In urban areas, streams respond more quickly to rainfall, with higher peak flows rising and falling more rapidly, than under forested conditions. Because less rainfall is being absorbed by vegetation and soil, more surface runoff occurs. Higher, more rapid, and frequent pulses of runoff (“flashiness”) lead to flooding and channel erosion. From a biological perspective, streams with more frequent peak flows are disturbed more often. Organisms that survive in these conditions are those that have adapted to more frequent and severe disturbances.

Flows from 17 stream sites, including 4 sites monitored by the U.S. Geological Survey, were measured and their flashiness calculated during the 2006 water year (October 2005–September 2006) (Figure O–17). The “flashiness index” is based on the reciprocal of the fraction of days during the year that the flow rises above the annual mean daily flow ($1/T_{Q_{mean}}$). The stream flashiness index was also calculated for previous years using historical data. The number of streams where data were available varies from one stream in 1941 to twenty-one streams in 2001. The median of the flashiness index scores across all streams measured in King County has increased between 1945 and 2006 (Figure O–18). These data suggest that increased urbanization in King County has resulted in faster surface runoff and peak streamflow rise and fall (increased flashiness) than previously occurred for at least some streams.

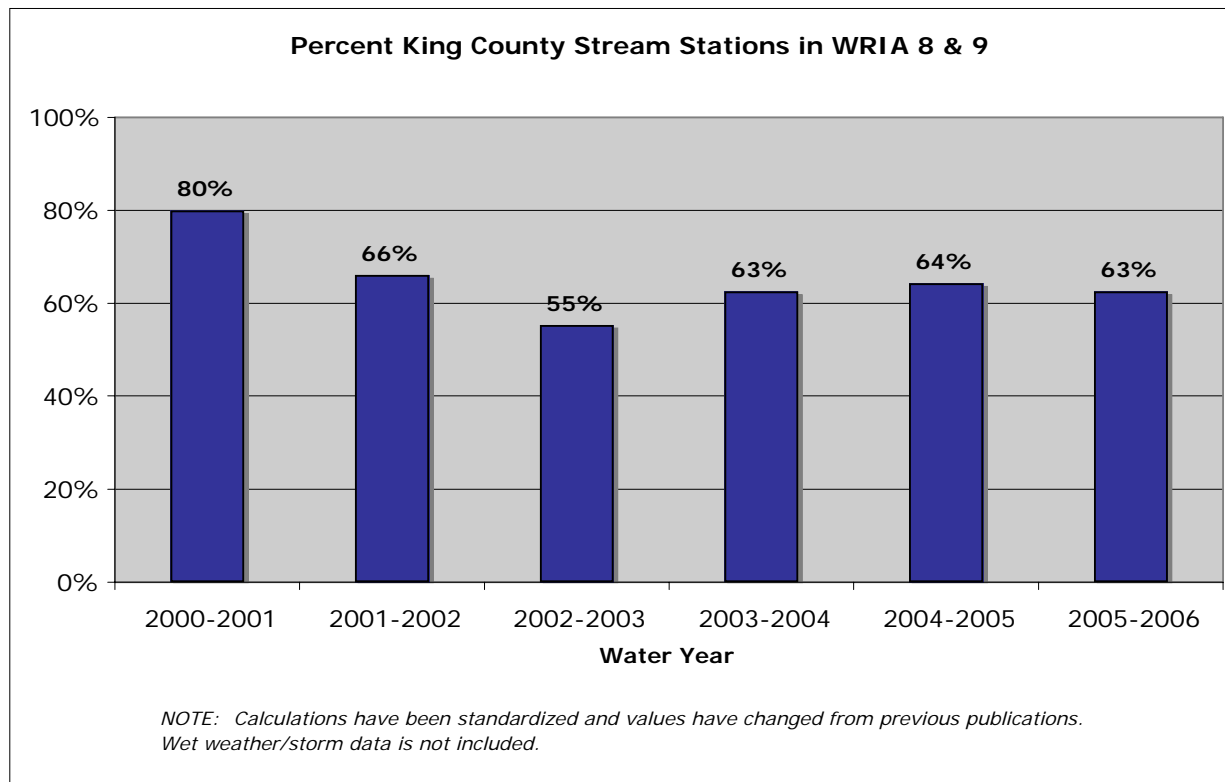


Figure O–14. Percentage of Streams in WRIs 8 and 9 with Low or Moderate Concerns Based on Water Quality Index, 2000–2006

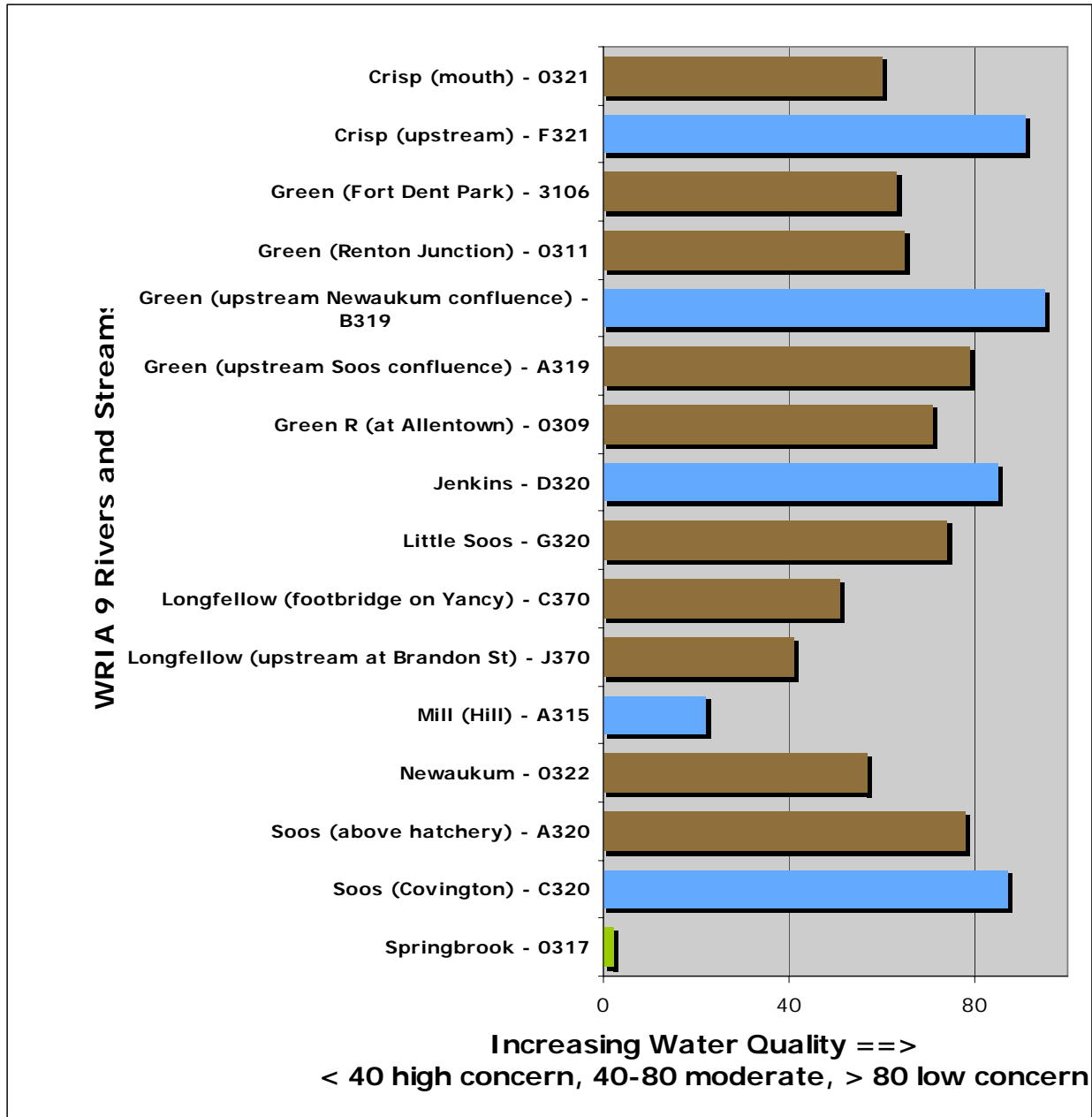


Figure O–15. Water Quality Index Rankings for Rivers and Streams in WRIA 9, 2005–2006

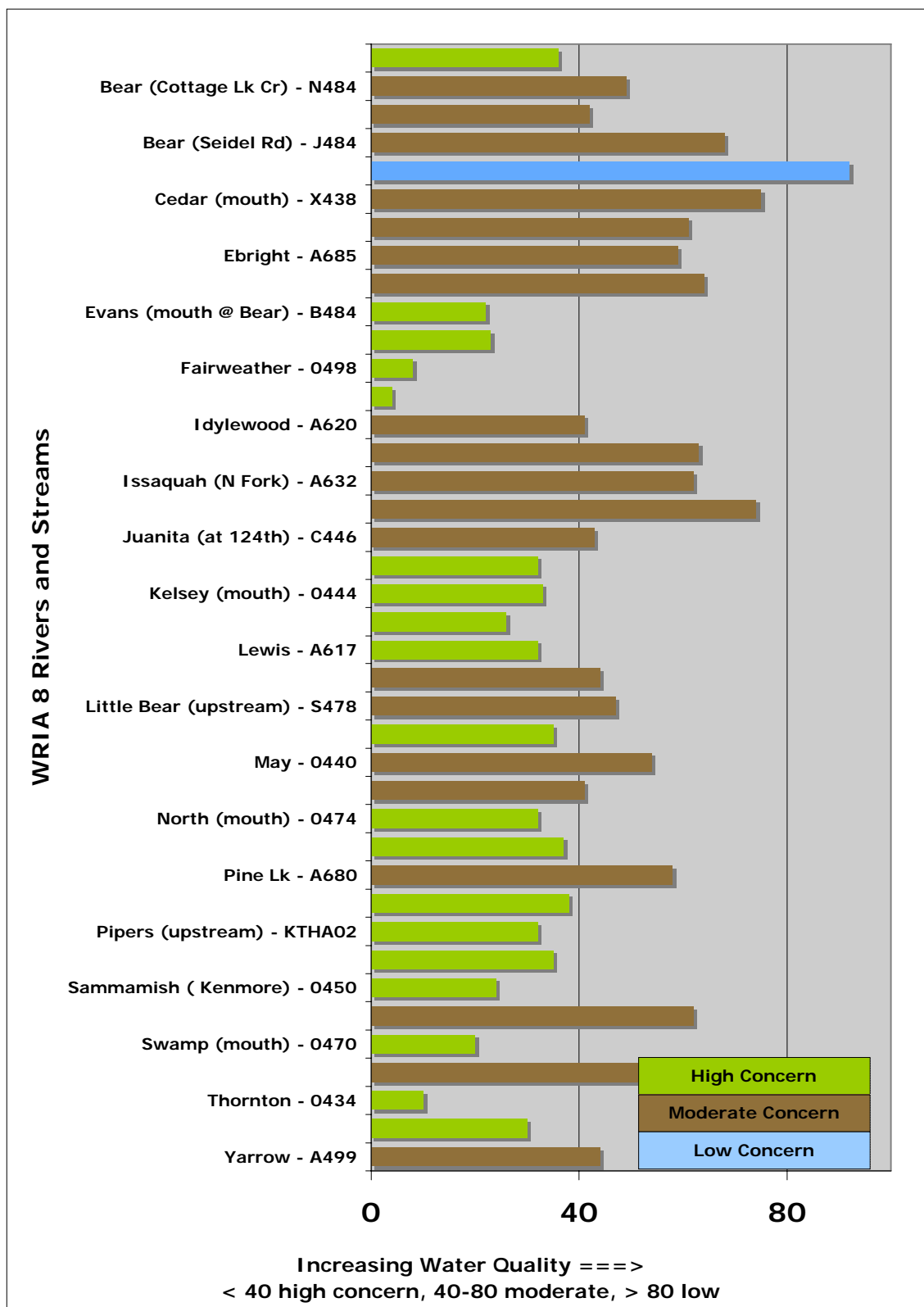


Figure O-16. Water Quality Index Rankings for Rivers and Streams in WRIA 8, 2005-2006

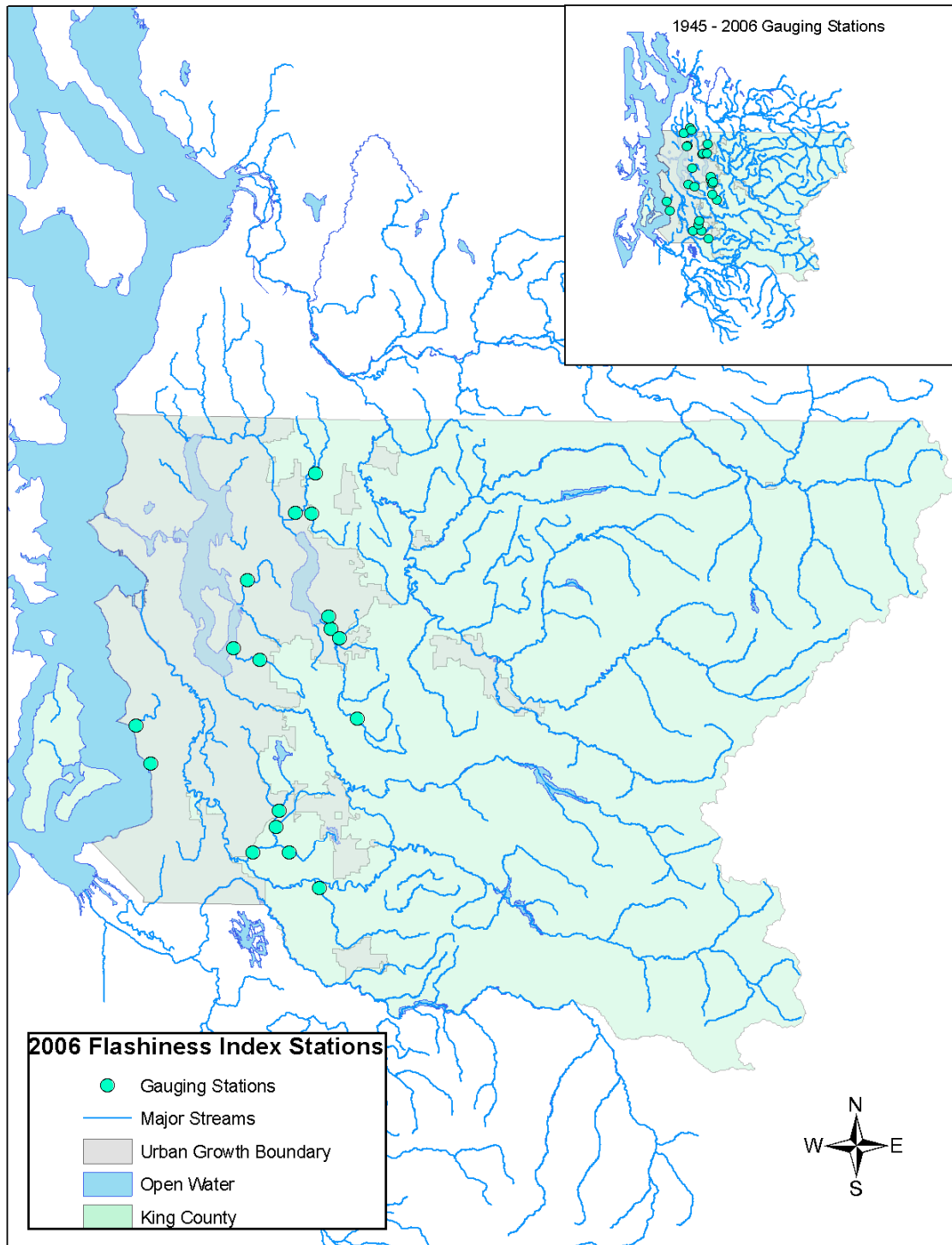


Figure O–17. Hydrologic Monitoring Stations Used to Calculate the Stream Flashiness Index, 1945–2006

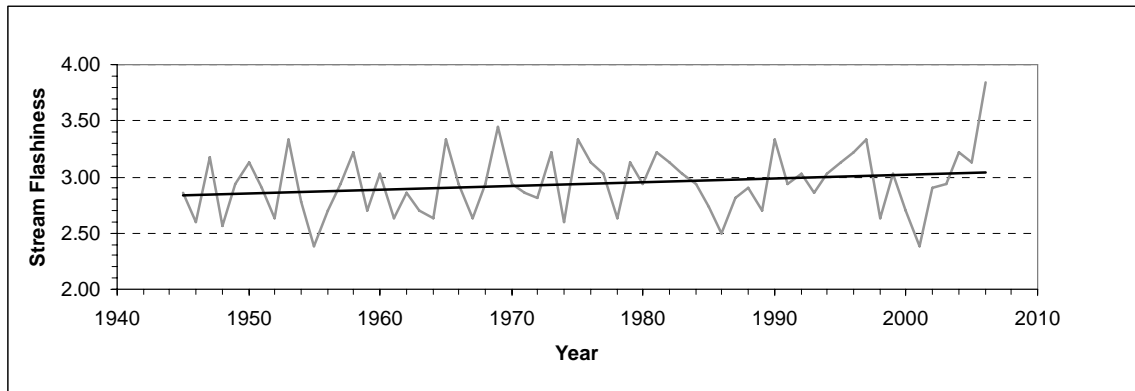


Figure O–18. Median Stream Flashiness Index per Year, 1945–2006

Appendix P

"Robinswood Agreement" Letter



Metropolitan King County Council
Regional Water Quality Committee

November 16, 1998

The Honorable Ron Sims
Room 400
516 Third Avenue
Seattle, WA 98104

Dear Executive Sims,

This letter is a follow-up to the Regional Water Quality Committee retreat you attended on October 29 at Robinswood House in Bellevue. As you recall, the purpose of the retreat was to discuss outstanding finance issues and come to an agreement on how to finance the Regional Wastewater Services Plan (RWSP). The financing policies for the RWSP provide the framework for establishing the funding mechanism necessary to implement the plan.

The Regional Water Quality Committee (RWQC), which includes representatives of King County, suburban cities, the City of Seattle, and sewer districts is considering a Regional Wastewater Services Plan to manage wastewater in the Puget Sound through the year 2030. The RWQC will soon make a recommendation to the full King County Council who will adopt the final RWSP.

The following guiding principles framed the discussion at the retreat:

1. The wastewater system is a regional system. As one participant said at the retreat, "All for one and one for all. from this day forward."
2. As a region, we are committed to protecting the water quality of our waterways, lakes, and Puget Sound.
3. The Regional Water Quality Committee shall provide periodic, substantive review of RWSP implementation.
4. The regional wastewater financing structure should reflect uniform regional rates for existing and new customers and achieve the principle of "growth pays for growth."

The principle of growth pays for growth is best implemented at this time through specific policies whereby existing customers pay for existing capacity and new customers pay for excess existing capacity and new capacity.

Listed below are the points of consensus developed at the retreat along with a brief explanation:

Base Rate/Capacity Charge

- Maintain a uniform monthly sewer rate for both existing and new customers such that, in general, existing customers pay for the existing system and new customers pay for growth
- Establish a uniform capacity charge within the service area to cover growth costs not captured by the monthly sewer rate for new customers
- Develop a strategy to increase and restructure the capacity charge and build a coalition for support in the State Legislature
- Maintain the current rate structure until the capacity charge is increased

A capacity charge will be levied against new connections, reconnections, ~~or~~ new services that meet the definition of new growth. This charge and the monthly service rates paid by both existing and new customers is intended to ensure that system capacity built to serve new customers recovers the revenue necessary to pay for system expansion.

King County will achieve this objective by allocating wastewater system costs to new and existing customers. The revenue needed to recover costs allocated to existing customers will be used to establish the monthly rate for all customers. The revenue required to recover costs allocated to new customers not recovered by the monthly rates paid by new customers will become the capacity charge subject to the 15-year term per new connection.

Costs allocated to existing customers will include current treatment plant conveyance and solids capacity, Inflow / Infiltration (I/I) assessment and reduction, and new conveyance for existing customers. Costs allocated to new customers include new treatment, conveyance and solids capacity, and existing excess capacity. Costs allocated proportionally to existing and new customers include CSO control, operations, maintenance and administration for the entire system.

Regional Inflow / Infiltration (I/I) Assessment & Pilots; and CSO Control

- King County pays 100 percent of the cost of I/I assessments and any pilot projects that are done to demonstrate I/I effectiveness
- Discontinue CSO benefit charge when changes in state legislation authorizing the capacity charge increases are passed by the Washington State Legislature (Seattle CSO payment)

- Over the next five years, perform a substantive technical and financial review of the I/I assessments & pilot projects and the CSO control efforts for potential adjustments

The RWQC will review and consider the I / I and CSO program elements over the next five years, following the King County Council's adoption of the plan. The RWQC may make recommendations for modifying or amending the plan to the King County Council after the five-year program reviews. These program reviews may include:

- compliance with federal and state laws affecting water quality (e.g., ESA and the RWSP Habitat Conservation Plan);
- legal decisions impacting the implementation of the RWSP;
- scientific and economic evaluations of the methodologies for addressing water quality protection; and
- integration of the wastewater system with other water quality programs for the region.

Uniform Interceptor Policy

- Establish uniform financing, construction, operation, maintenance, and replacement policies for all interceptors in its service area
- Assume responsibility for interceptors under this policy at the time the RWSP is adopted

RWQC members will continue to review the financial implications of this policy as it is developed.

RWQC involvement in RWSP implementation

The RWQC expects to review the RWSP during implementation at key decision points and wants to ensure that there is language in the plan that ensures these reviews are done on a regular basis.

Liability Protection

In developing its response to Endangered Species Act (ESA) listings, the King County Wastewater Treatment Division could evaluate the opportunity and feasibility to include the programs of its component agency customers in any permits or agreements that may include local sewer operations, maintenance and construction activities. The feasibility analysis could include identifying the responsibilities for component agency participation in a King County Wastewater Treatment Division Habitat Conservation Plans or other ESA response and any protection to be obtained from participating.

In order to implement these points of consensus, the RWQC will be considering and incorporating amendments to the policies in the Executive' Preferred Plan and will vote on these amendments when the RWQC votes on the RWSP.

Sincerely,

Members, Regional Water Quality Committee

<u>John P. F.</u>	<u>Larry Pullen</u>
<u>William A. Fager</u>	<u>Louise Miller</u>
<u>James D. Quake</u>	<u>Richard Conlin</u>
<u>Connie King</u>	<u>Margaret Rogers</u>
<u>Patrick H. Hawkins</u>	
<u>Brian D. Dinkowich</u>	

CC: Regional Water Quality Committee Members

Appendix Q

RWSP Project Reports

Appendix Q

RWSP Project Reports

The RWSP reporting policies call for details on RWSP capital projects, including a project schedule, an expenditures summary (including staff labor and miscellaneous services), a description of any adjustments to costs and schedules, and a status of the project contracts. This appendix meets these requirements and includes a project report for the year 2005 on the following RWSP capital projects that are in design or construction:

- Brightwater Treatment Plant, project #423484¹
- Brightwater Conveyance, project #423575
- Brightwater Reclaimed Water Pipeline, project #423600
- Vashon Treatment Plant, project #423460
- Carnation Treatment Plant, project #423557
- Bellevue Pump Station, project #423521
- Black Diamond Storage, project #423373, subproject 621
- Kent/Auburn Conveyance System Improvements, project #423582
- Hidden Lake Pump Station and Boeing Creek Trunk, project #423365
- Fairwood Interceptor Sewer Project, project #423494
- Juanita Bay Pump Station, project #423406
- North Creek Pipeline, project # 423596
- Pacific Pump Station, project #423518
- RWSP Local System I/I Control, project #423297
- Sediment Management Program, project #423368
- Lower Duwamish Waterway Superfund, project #423589
- West Point Digestion Improvements, project #423593

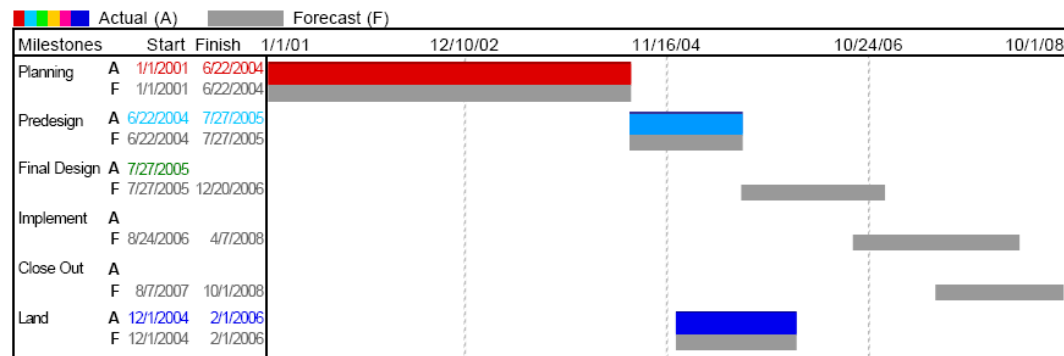
Each report is generated from the Wastewater Treatment Division (WTD) Project Management and Financial Forecast Database. An explanation of the information provided in each report follows.

¹Each wastewater capital project is assigned a six-digit number such as 423484. The first two numbers (42) identify this as a wastewater project (as opposed to a transit or roads project). The third number (3) identifies the project as capital project (as opposed to operating) and the last three numbers are sequential numbers reflecting the order the projects were assigned in a particular year.

Schedule and Cost Summary Page

The second page of each report shows the project's milestone schedule in a bar graph format. The graph includes timelines for the various phases of a project: planning, predesign, final design, implementation, close out, and land acquisition. An example of a project schedule follows.

Milestone Schedule



The cost summary table provides expenditure information for the year 2006 and lifetime budget information based on the adopted 2006 budget. An example of a project cost summary table and an explanation of how to read the summary follows.

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	6,887,028	7,135,180	9,905,690	8,507,574	24,152,079	22,964,516
Construction Contracts	6,865,870	7,053,810	9,792,000	8,486,416	23,911,274	22,684,448
Outside Agency Construction	0	0	15,000	0	0	30,450
Other Capital Charges	21,158	81,370	98,690	21,158	240,805	249,618
NON-CONSTRUCTION	1,913,048	1,057,824	1,783,031	10,525,414	11,583,473	14,012,401
Engineering	783,309	504,863	1,050,600	6,279,148	6,861,058	8,670,261
Planning & Management Svcs.	33,876	0	0	104,680	50,261	70,804
Permitting & Other Agency Support	42,108	1,567	1,567	93,395	202,435	214,318
Right-of-Way	0	0	0	1,541,751	1,516,377	1,541,751
Misc. Services & Materials	47,270	0	5,000	123,525	20,043	86,405
Staff Labor	1,006,485	551,393	725,864	2,382,915	2,933,299	3,428,862
CREDITS AND REVENUES	0	-515,000	0	0	31,363	0
Credits and Revenues	0	-515,000	0	0	31,363	0
Total \$	8,800,077	7,678,004	11,688,721	19,032,988	35,766,916	36,976,917

Expenses
CONSTRUCTION
Construction Contracts
Owner Furnished Equipment
Outside Agency Construction
Other Capital Charges
NON-CONSTRUCTION
Engineering
Planning & Management Svc
Permitting & Other Agency Su
Right-of-Way
Misc. Services & Materials
Staff Labor
PROJECT RESERVE
Project Reserve
ADJUSTMENTS
Adjustments
CREDITS AND REVENUES
Credits and Revenues

The Expense column of the cost summary table is broken down into four main headings.

- Costs associated with Construction.
- Non-Construction Costs. These are the costs associated with outside engineering services, permitting and other agency support (costs for permits), planning and management services, right-of-way (costs associated with acquisition and easements), and WTD and other county staff labor costs.
- Project Reserve Costs. These are costs associated with project contingency.
- Credits and Revenues. Credits and revenues reflect grants received, rents received, or salvage/surplus revenues.

2006 Actual Expenditure and Plan		
IBIS YTD Dec-06	Adopted Plan	Updated Plan
6,887,028	7,135,180	9,905,690
6,865,870	7,053,610	9,792,000
0	0	15,000
21,158	81,370	98,690
1,913,048	1,057,624	1,783,031
783,309	504,663	1,050,600
33,876	0	0
42,108	1,567	1,567
0	0	0
47,270	0	5,000
1,006,485	551,393	725,864
0	-515,000	0
0	-515,000	0
8,800,077	7,678,004	11,688,721

The columns under 2006 Actual Expenditure and Plan of the cost summary table reflect expenditures for 2006. The three headings under annual expenditures include:

- IBIS* YTD DEC-06. This column reflects the expenditures for the year 2006, from January through December 2006.
- Adopted Plan. These costs reflect the approved appropriation and breakdown by expense category for the year 2006.
- Updated Plan. The costs in this column reflect what was anticipated to be expended of the 2006 council-approved project budget in preparation for the 2007–2012 adopted budget submittal.

Project Managers begin developing their project budget submittals nine months before a budget is adopted and appropriated. Changes may occur from the time a budget is developed as compared to the actual budget year. These changes may cause an annual budget to be over or under expended. Such changes may result from new information that could affect the project's scope or schedule, construction delays, or permitting and environmental review complexities.

* IBIS refers to King County's financial reporting system.

Lifetime Actual Expenditure and Budget		
IBIS LTD Dec-06	Lifetime Budget	Updated Budget
8,507,574	24,152,079	22,964,516
8,486,416	23,911,274	22,684,448
0	0	30,450
21,158	240,805	249,618
10,525,414	11,583,473	14,012,401
6,279,148	6,861,058	8,670,261
104,680	50,261	70,804
93,395	202,435	214,318
1,541,751	1,516,377	1,541,751
123,525	20,043	86,405
2,382,915	2,933,299	3,428,862
0	31,363	0
0	31,363	0
19,032,988	35,766,916	36,976,917

The columns under Lifetime Actual Expenditure and Budget of the cost summary table include the following three columns:

- IBIS LTD Dec-06. The costs in this column refer to total project expenditures through December 2006.
- Lifetime Budget. The costs in this column refer to projected total inflated project costs as adopted in the 2006-2011 budget (November 2005).
- Updated Budget. The costs in this column reflect the projected total inflated project costs as adopted in the 2007-2012 budget (November 2006). As noted earlier, project managers begin developing their project budget submittals around nine months before a budget is adopted and appropriated. The next year's (2007) budget submittal takes into account changes to the project scope or schedule, or new information identified since the current year's (2006) budget was adopted.

Contract Status

The third page of each project report includes information on contract status, if there are contracts associated with the project.

The contract status table provides the name of the contract, the original contract amount, amounts associated with amendments or change orders, and percentage paid of contract. The "Phased Amendments" column refers to additional planned phases of the contract; the value of those planned phase amendments are included in the "Phased Amendment" column. An example of the contract status table follows.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Juanita Bay Pump Station Replacement	\$18,988,000 C43085C	\$0	\$18,988,000	\$28,957	0%	2	\$19,016,957	\$7,896,688	12	42%
Eng'g Services for Juanita Bay & Forcemain Update	\$1,849,364 E03037E	\$4,725,798	\$6,575,153	\$0	0%	1	\$6,575,153	\$6,295,200	68	96%

RWSP Project Report

DECEMBER 2006

423484 Brightwater Treatment Plant



Project Description

This project will design and construct a treatment plant to provide 39 million gallons per day (mgd) of treatment capacity (average wet weather flow) by 2010 and 54 mgd of capacity by 2040. The Brightwater Treatment Plant will be located just east of State Route 9 and north of State Route 522 and Woodinville. Treatment and support facilities will cover approximately 43.0 acres (with additional area for storm water treatment, open space, wildlife habitat and wetlands). The Brightwater plant will include membrane bioreactor (MBR) secondary treatment systems, Class B biosolids, reclaimed water production, odor control systems, and disinfection.

Project Phase: 3 Final Design

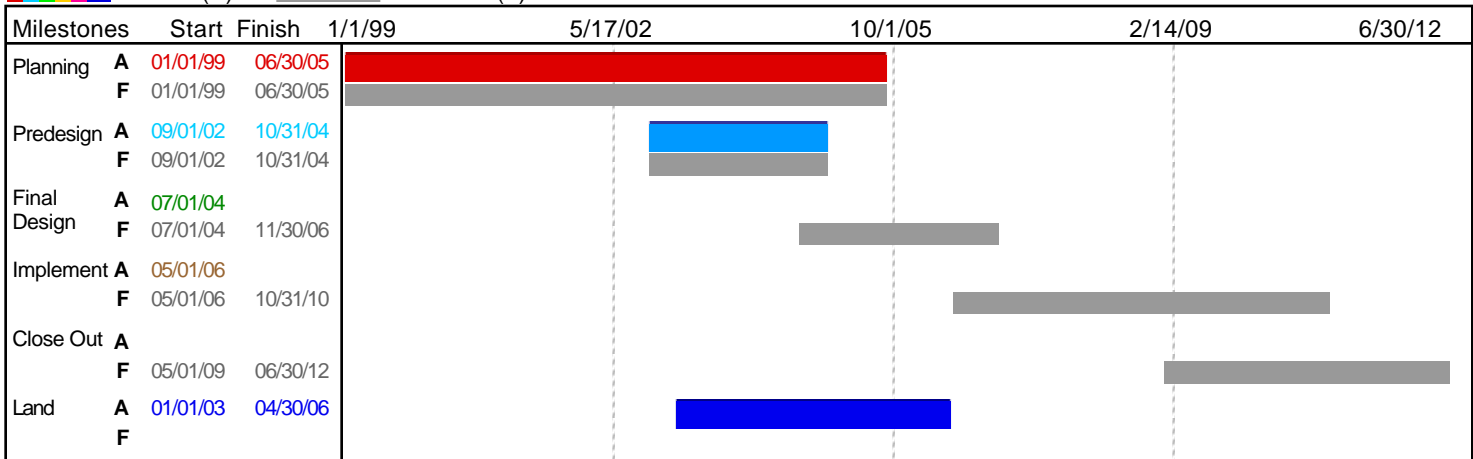


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	21,448,761	16,522,503	32,403,786	24,708,222	384,509,178	478,861,442
Construction Contracts	21,384,905	16,522,503	31,760,908	24,516,276	384,421,268	478,130,950
Owner Furnished Equipment	0	0	0	34,431	34,384	34,431
Outside Agency Construction	62,699	0	0	62,699	0	0
Other Capital Charges	1,157	0	642,878	94,817	53,526	696,061
NON-CONSTRUCTION	74,239,034	21,949,888	65,317,016	233,524,729	239,384,265	306,271,754
Engineering	12,529,837	4,228,930	8,816,389	56,361,048	76,178,630	56,867,396
Planning & Management Svcs.	2,761,237	0	2,486,875	11,959,683	6,434,013	24,754,525
Permitting & Other Agency Support	38,813,634	7,202,567	35,688,118	41,317,655	24,373,345	88,175,072
Right-of-Way	16,388,720	7,624,335	14,821,560	105,360,126	101,641,682	103,792,966
Misc. Services & Materials	302,819	313,795	313,795	3,300,761	4,736,486	4,826,964
Staff Labor	3,442,787	2,580,262	3,190,279	15,225,456	26,020,109	27,854,832
PROJECT RESERVE	0	0	0	0	31,226,400	19,508,447
Project Reserve	0	0	0	0	31,226,400	19,508,447
ADJUSTMENTS	0	0	0	0	0	0
Adjustments	0	0	0	0	0	0
CREDITS AND REVENUES	-1,004,494	-1,063,135	-1,032,170	-2,625,056	-10,290,757	-10,609,482
Credits and Revenues	-1,004,494	-1,063,135	-1,032,170	-2,625,056	-10,290,757	-10,609,482
Total \$	94,683,302	37,409,256	96,688,632	255,607,896	644,829,087	794,032,162

Cost/Budget Adjustments

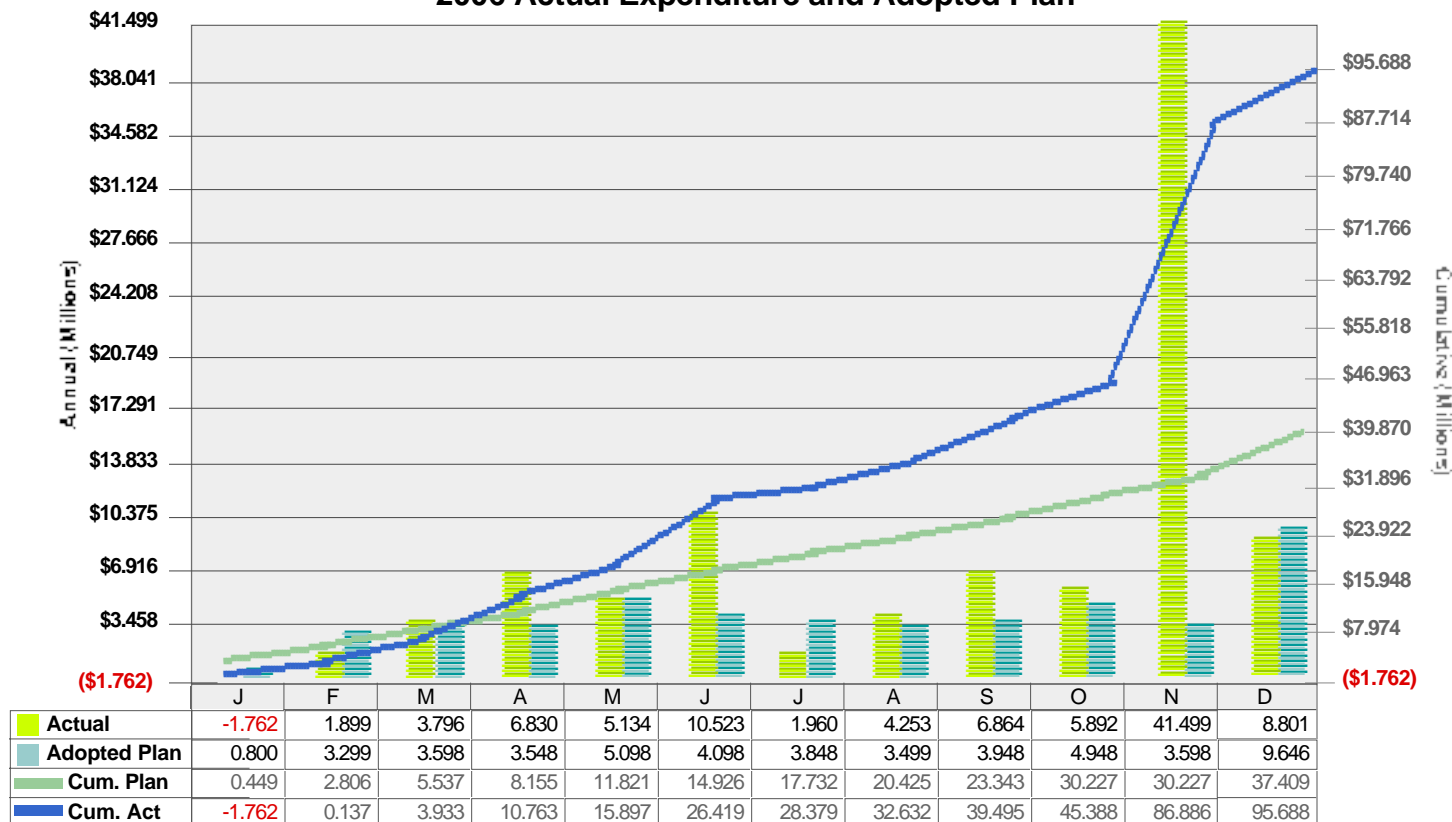
The project lifetime cost was updated as a result of the December 2005 Trend Cost review provided to Council in early 2006. The Lifetime Updated Budget column reflects an increase from the prior baseline budget of \$644.8 million to \$794 million primarily due to the impact of inflation and mitigation costs. A portion of this increase was offset by decreases in Conveyance and land costs.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Engineering Services for Brightwater Treatment Plant E13035E	\$9,719,364	\$31,747,643	\$41,467,007	\$17,999,079	43%	30	\$59,466,086	\$53,000,167	334	89%
RWSP Program Management Services Development P03012P	\$8,205,521	\$0	\$8,205,521	\$1,245,617	15%	4	\$9,451,138	\$9,328,574	47	99%
North Treatment Facilities Site Selection P93012P	\$4,617,000	\$0	\$4,617,000	\$7,629,920	165%	11	\$12,246,920	\$12,000,349	70	98%
Brightwater Legal Services Agreement/Brightwater legal Svcs	\$3,500,000	\$0	\$3,500,000	\$0	0%		\$3,500,000	\$154,205	10	4%
Construction Management Services for the Treatment Plant P53007P	\$1,497,206	\$0	\$1,497,206	\$2,770,004	185%	1	\$4,267,210	\$804,240	10	19%
GCCM Contract for Brightwater C38138C	\$1,424,428	\$0	\$1,424,428	\$719,295	2,273%	6	\$33,800,779	\$15,312,617	106	45%
NTF Legal Services T01129T	\$1,150,000	\$0	\$1,150,000	\$2,150,000	187%	3	\$3,300,000	\$2,887,846	59	88%
NTF Legal Services T01130T	\$1,150,000	\$0	\$1,150,000	\$2,463,000	214%	3	\$3,613,000	\$3,184,255	63	88%
NTF Legal Services T01129T	\$1,150,000	\$0	\$1,150,000	\$2,150,000	187%	3	\$3,300,000	\$2,887,846	59	88%
NTF Legal Services T01130T	\$1,150,000	\$0	\$1,150,000	\$2,463,000	214%	3	\$3,613,000	\$3,184,255	63	88%
Brightwater Treatment Plant Testing and Inspection P00001P06	\$100,000	\$0	\$100,000	\$0	0%		\$100,000	\$57,304	5	57%
Brightwater Team Facilitation P56016P	\$69,932	\$0	\$69,932	\$24,374	35%	2	\$94,306	\$68,744	7	73%

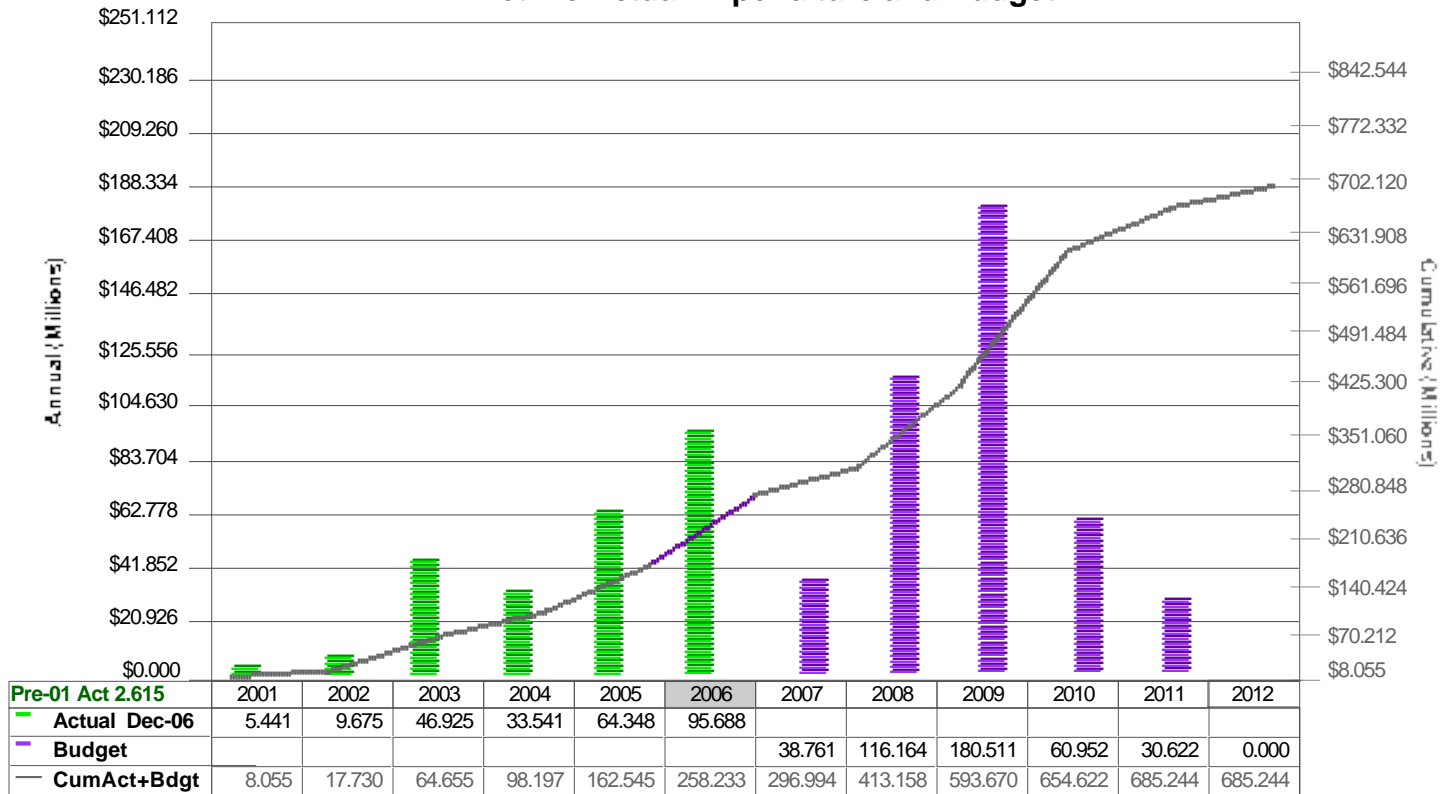
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

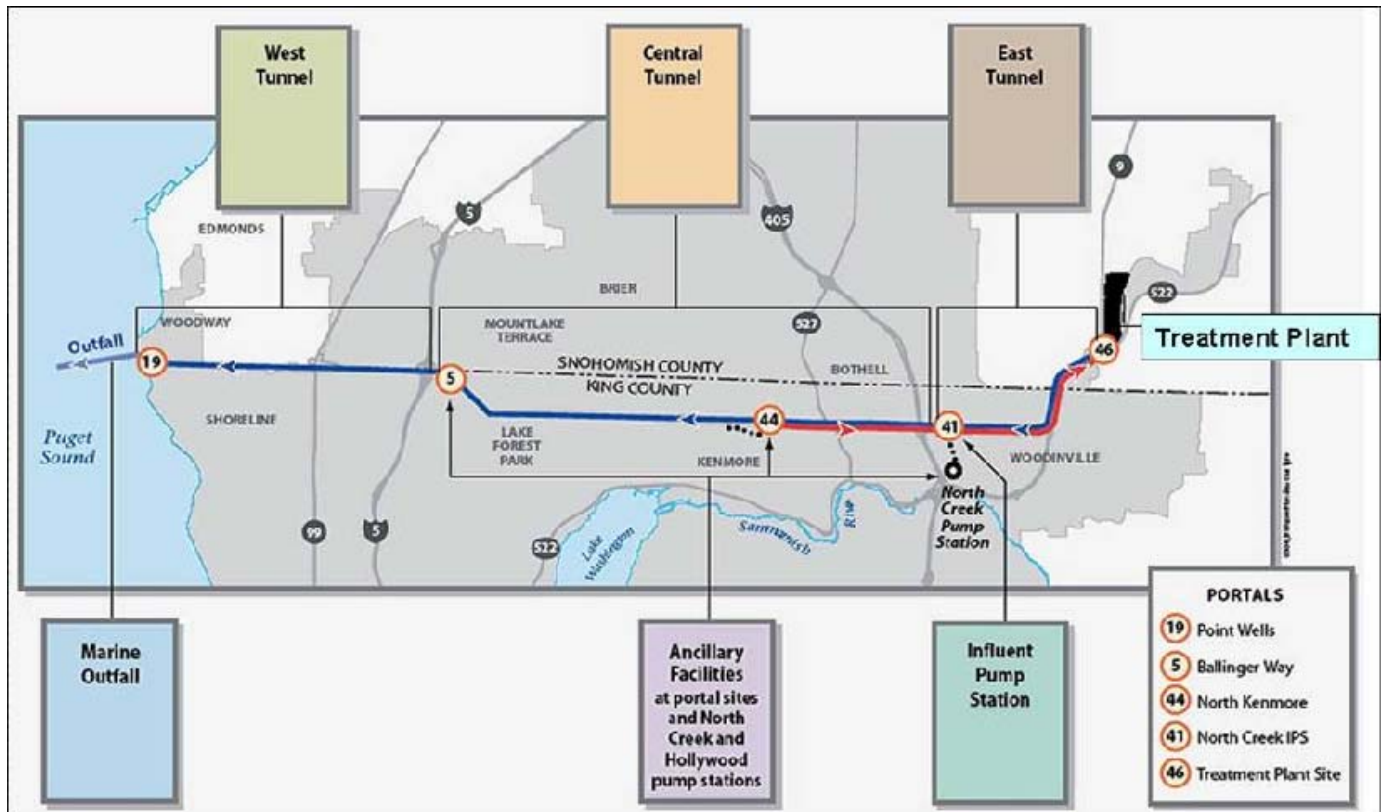
Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423575 Brightwater Conveyance



Project Description

This project will carry treated and untreated wastewater to and from the Brightwater treatment plant located north of Woodinville along State Route 9. The Brightwater project will serve south Snohomish County and north King County once it becomes operational in late 2010. The 14.9 mile long Brightwater conveyance system is composed of a deep large diameter tunnel extending from the treatment plant to Puget Sound. The tunnel will discharge highly treated effluent through a new outfall located one mile offshore of point Wells at a depth of 600'.

Project Phase: 4 Implementation

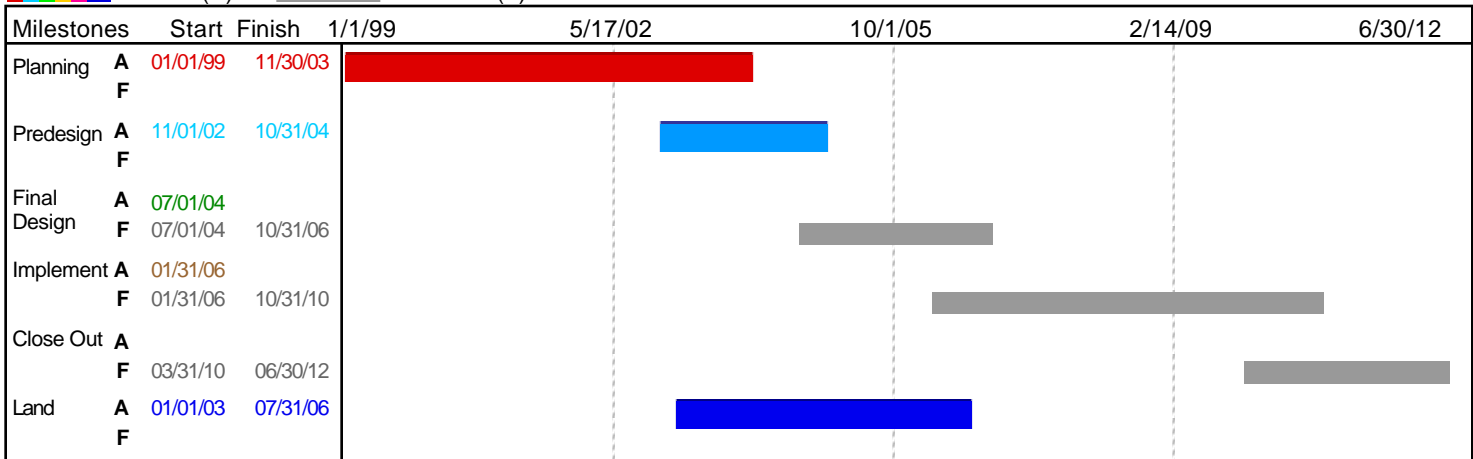


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule


 Actual (A) Forecast (F)



Schedule Adjustments

N/A

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	51,034,483	23,469,496	41,227,021	56,193,179	705,313,807	660,848,472
Construction Contracts	50,584,831	23,469,496	35,409,535	55,598,767	705,052,251	650,047,986
Owner Furnished Equipment	0	0	0	87,999	87,580	87,999
Outside Agency Construction	318,561	0	3,720,871	322,429	130,000	3,724,740
Other Capital Charges	131,091	0	2,096,615	183,984	43,975	6,987,748
NON-CONSTRUCTION	23,501,764	32,746,766	31,199,365	117,928,574	228,844,011	206,563,963
Engineering	9,128,059	17,225,852	12,085,007	58,157,891	136,819,655	82,878,546
Planning & Management Svcs.	4,782,580	0	4,392,285	20,518,043	13,318,665	57,860,431
Permitting & Other Agency Support	371,608	11,408,478	6,260,688	1,548,410	22,088,832	13,924,480
Right-of-Way	5,209,639	0	4,348,948	17,574,760	21,245,987	16,714,069
Misc. Services & Materials	496,734	341,315	341,315	3,237,135	4,822,349	4,799,717
Staff Labor	3,513,143	3,771,121	3,771,121	16,892,334	30,548,523	30,386,720
PROJECT RESERVE	0	0	0	0	89,486,135	93,094,949
Project Reserve	0	0	0	0	89,486,135	93,094,949
ADJUSTMENTS	0	0	0	0	0	0
Adjustments	0	0	0	0	0	0
CREDITS AND REVENUES	-3,501	0	0	-5,351	0	-1,850
Credits and Revenues	-3,501	0	0	-5,351	0	-1,850
Total \$	74,532,745	56,216,262	72,426,386	174,116,402	1,023,643,953	960,505,535

Cost/Budget Adjustments

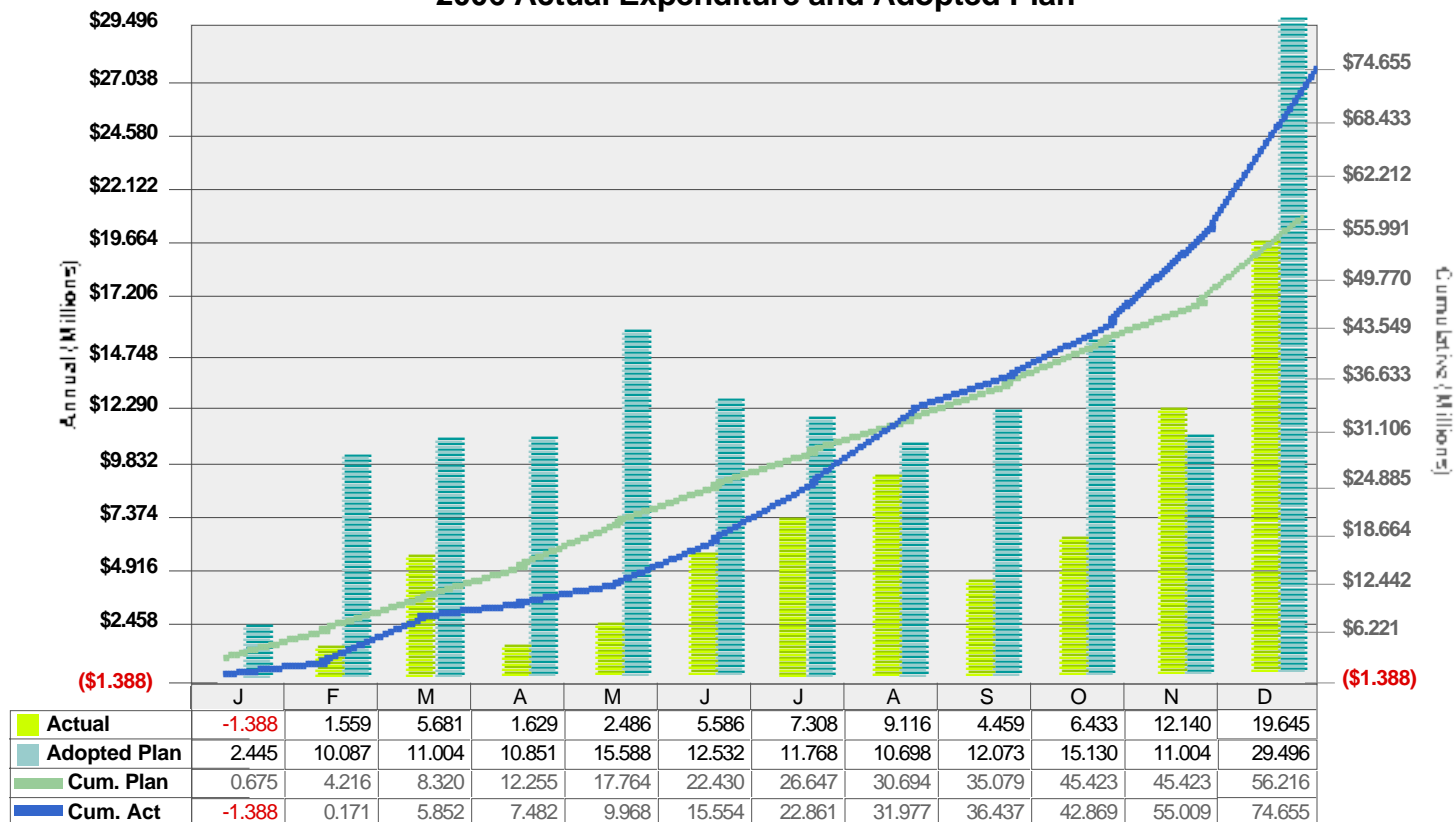
N/A

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Brightwater Conveyance Sys, Central Contract, BW Tunnel, C00005C06	\$211,076,058	\$0	\$211,076,058	\$6,558	0%	1	\$211,082,616	\$20,769,834	7	10%
East Combined Tunnel C53060C	\$130,848,750	\$0	\$130,848,750	\$71,963	0%	2	\$130,920,713	\$25,241,994	7	19%
CM Services for BW Conveyance P43020P	\$13,327,255	\$0	\$13,327,255	\$962,548	7%	1	\$14,289,803	\$4,873,722	19	34%
Geotechnical Services for the Brightwater Conveyance E23007E	\$11,474,386	\$10,386,010	\$21,860,396	\$285,657	1%	4	\$22,146,053	\$14,375,858	463	65%
Brightwater Conveyance E33015E/A	\$11,173,313	\$2,291,578	\$13,464,890	\$0	0%	1	\$13,464,890	\$10,995,350	28	82%
Prof Svcs for Brightwater Conveyance Final Design E33015E/C	\$7,167,571	\$1,581,546	\$8,749,117	\$0	0%	1	\$8,749,117	\$5,503,157	28	63%
Prof Svcs for Brightwater Conveyance Final Design E33015E/B	\$5,672,837	\$1,234,040	\$6,906,877	\$0	0%	1	\$6,906,877	\$4,085,786	28	59%
Brightwater Reclaimed Water Conveyance Facility E43010E	\$1,918,771	\$1,300,972	\$3,219,743	-\$469,808	-15%	4	\$2,749,936	\$1,914,918	28	70%
Construction Management Services for the Brightwater P53017P	\$933,568	\$0	\$933,568	\$0	0%		\$933,568	\$86,278	5	9%
Brightwater Oversight Monitoring Consultant P43024P	\$475,916	\$337,636	\$813,552	\$0	0%	1	\$813,552	\$371,830	22	46%
Brightwater Conveyance Testing & Inspection P53018P	\$250,000	\$0	\$250,000	\$0	0%		\$250,000	\$15,114	8	6%

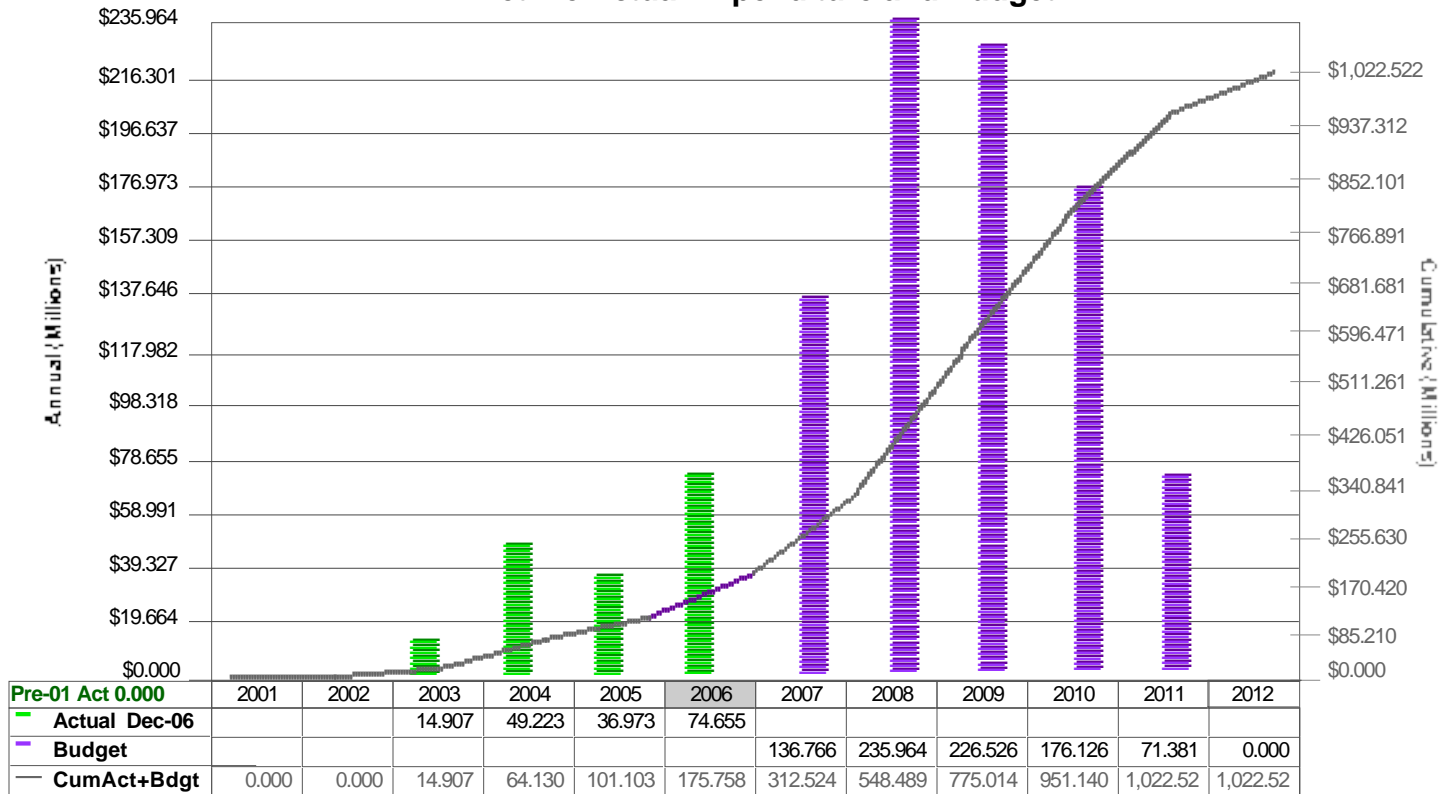
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

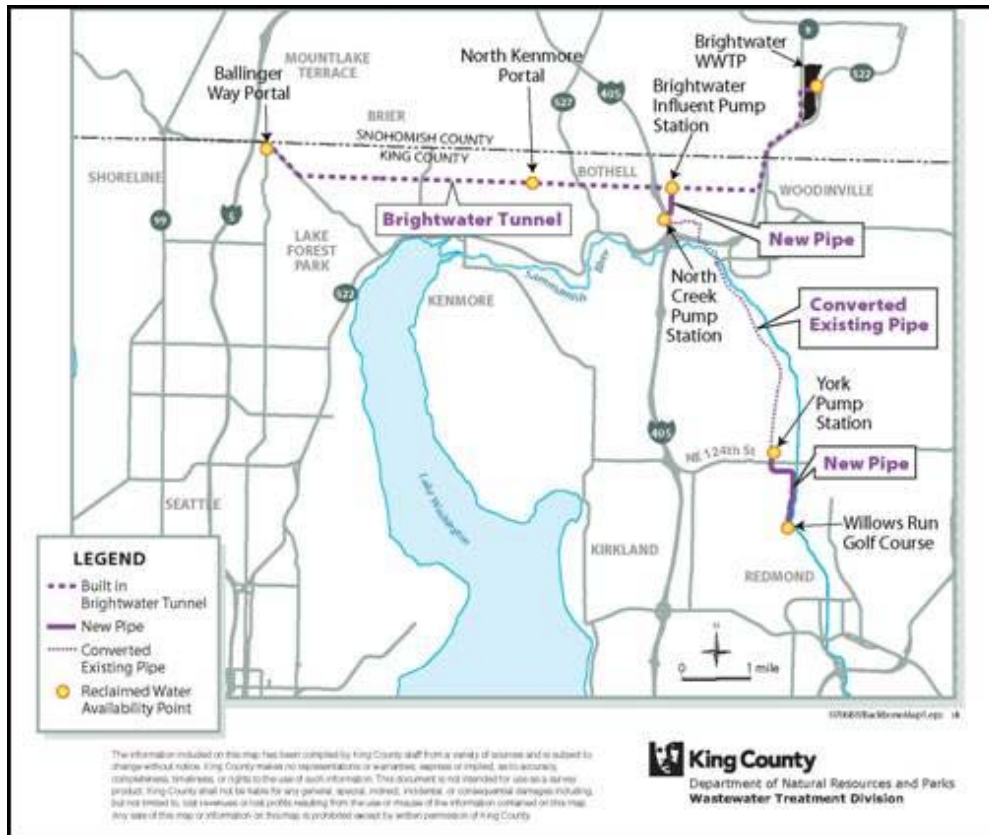
Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423600 Brightwater Reclaimed Water Pipeline



Project Description

This project will convey Class A reclaimed water produced at the Brightwater Treatment Plant to the Sammamish Valley and to potential customers along the effluent pipeline system starting in 2011. The system initially (Phase I) will provide up to 7 mgd of reclaimed water to the area by gravity. Second phase of the BWRW (Phase II) involves bringing the West segment of the backbone into service by adding pumping capacity as needed to match demand, providing up to 14 mgd of additional reclaimed water for a total 21 mgd.

Project Phase: 4 Implementation

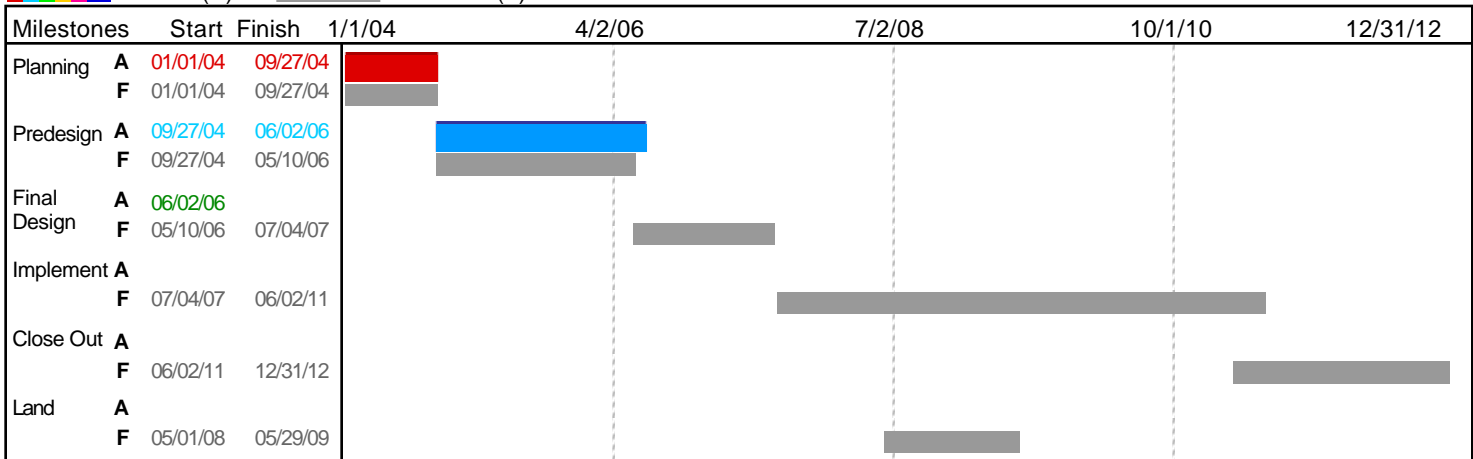


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	255	154,500	130,000	255	17,413,745	17,771,168
Construction Contracts	0	103,000	0	0	17,198,288	17,552,440
Other Capital Charges	255	51,500	130,000	255	215,457	218,728
NON-CONSTRUCTION	1,704,557	1,730,989	1,500,708	1,704,557	7,599,995	6,884,874
Engineering	1,022,941	987,500	933,684	1,022,941	3,546,628	3,519,460
Permitting & Other Agency Support	4,683	51,500	30,000	4,683	420,853	159,273
Right-of-Way	0	103,000	0	0	215,551	266,955
Misc. Services & Materials	29,998	60,083	34,627	29,998	352,821	197,709
Staff Labor	646,935	528,906	502,397	646,935	3,064,142	2,741,476
PROJECT RESERVE	0	0	0	0	2,300,283	2,830,985
Project Reserve	0	0	0	0	2,300,283	2,830,985
Total \$	1,704,811	1,885,489	1,630,708	1,704,811	27,314,023	27,487,026

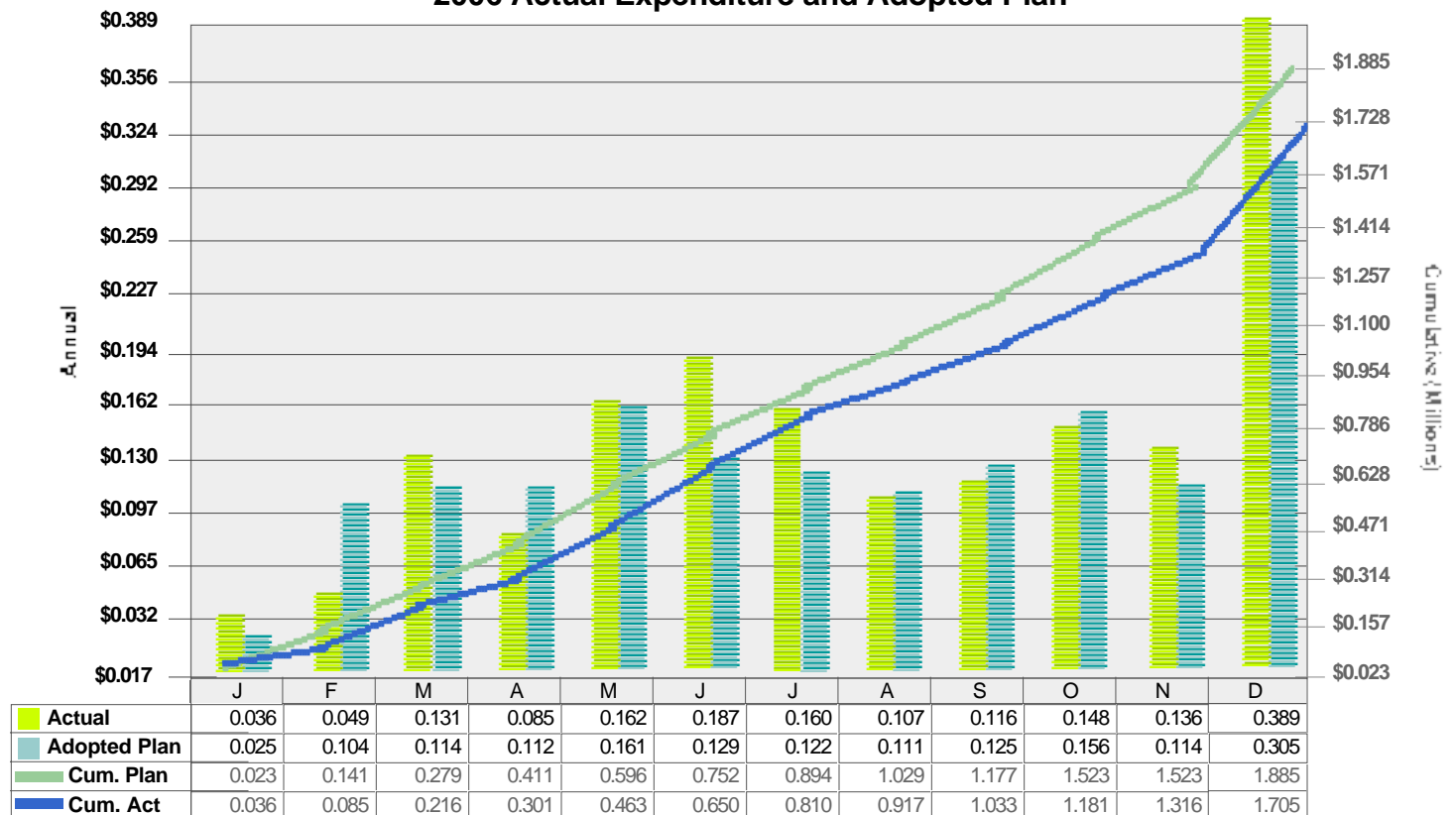
Cost/Budget Adjustments

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Brightwater Reclaimed Water Conveyance Facility	\$1,918,771	\$1,300,972	\$3,219,743	-\$469,808	-15%	4	\$2,749,936	\$1,914,918	28	70%
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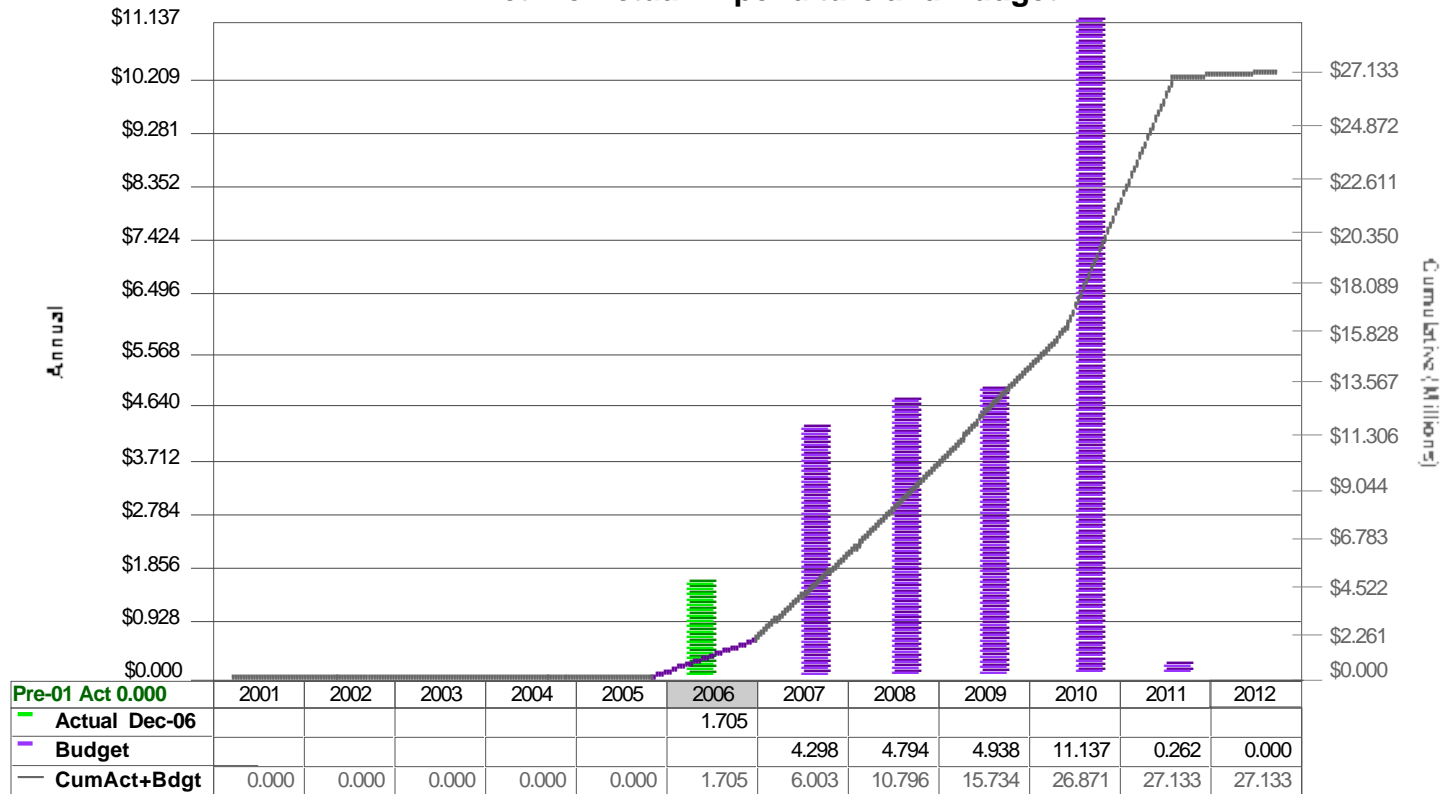
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423460 Vashon Island T.P. Upgrade



Project Description

This project expands and upgrades the existing Vashon Island Wastewater Treatment Plant and outfall in accordance with a contract executed in 1999 with the Vashon Sewer District. Under this agreement, King County has also worked with the local sewer district to implement operational and safety improvements to the local sewage collection systems. Construction on the treatment plant upgrades to increase capacity and add back-up treatment systems began in 2004. Substantial completion of these improvements was achieved on schedule in December 2006. Other related improvements implemented via this project include: moving the marine outfall farther out into Puget Sound, removal of derelict fish nets, installation of a telemetry system to allow communication and coordination with King County's South Treatment plant and various safety improvements.

Project Phase: 4 Implementation

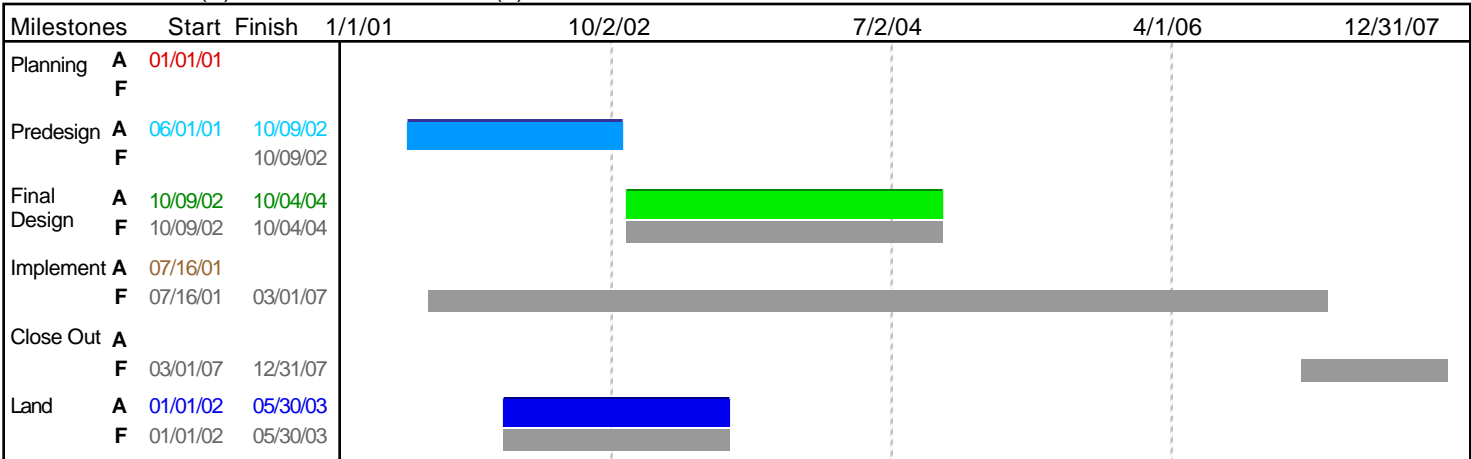


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

The new Vashon WWTP began receiving wastewater in October 2006, exceeding the Department of Ecology compliance order requirement that the plant to be in operation by the first quarter of 2007. Achieving this milestone has been a challenge as there have been a number of delays during the construction phase. In 2006 construction progress has been steady but slow due to late delivery of control equipment and severe weather later in the year. During 2006, via Change Orders, the date of substantial completion of the Vashon Wastewater Treatment Plant Upgrade was revised from July 15, 2006 to December 6, 2006.

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	4,258,179	3,858,380	3,768,998	13,885,444	13,825,566	13,855,429
Construction Contracts	4,254,954	3,858,380	3,768,998	13,728,602	13,671,948	13,701,812
Owner Furnished Equipment	0	0	0	4,839	4,839	4,839
Outside Agency Construction	0	0	0	0	0	0
Other Capital Charges	3,225	0	0	152,003	148,778	148,778
NON-CONSTRUCTION	1,646,194	637,750	914,125	7,000,406	5,564,635	6,513,211
Engineering	389,335	354,500	328,000	3,206,374	3,108,367	3,227,039
Planning & Management Svcs.	471,573	0	180,000	914,963	19,302	643,390
Permitting & Other Agency Support	15,178	12,875	12,875	190,473	258,518	183,851
Right-of-Way	0	0	0	0	0	0
Misc. Services & Materials	44,616	0	0	421,200	342,292	376,584
Staff Labor	725,491	270,375	393,250	2,267,396	1,836,156	2,082,347
PROJECT RESERVE	0	0	0	0	0	0
Project Reserve	0	0	0	0	0	0
ADJUSTMENTS	0	0	0	0	0	0
Adjustments	0	0	0	0	0	0
CREDITS AND REVENUES	-433,900	0	0	-433,900	0	0
Credits and Revenues	-433,900	0	0	-433,900	0	0
Total \$	5,470,473	4,496,130	4,683,123	20,451,950	19,390,201	20,368,640

Cost/Budget Adjustments

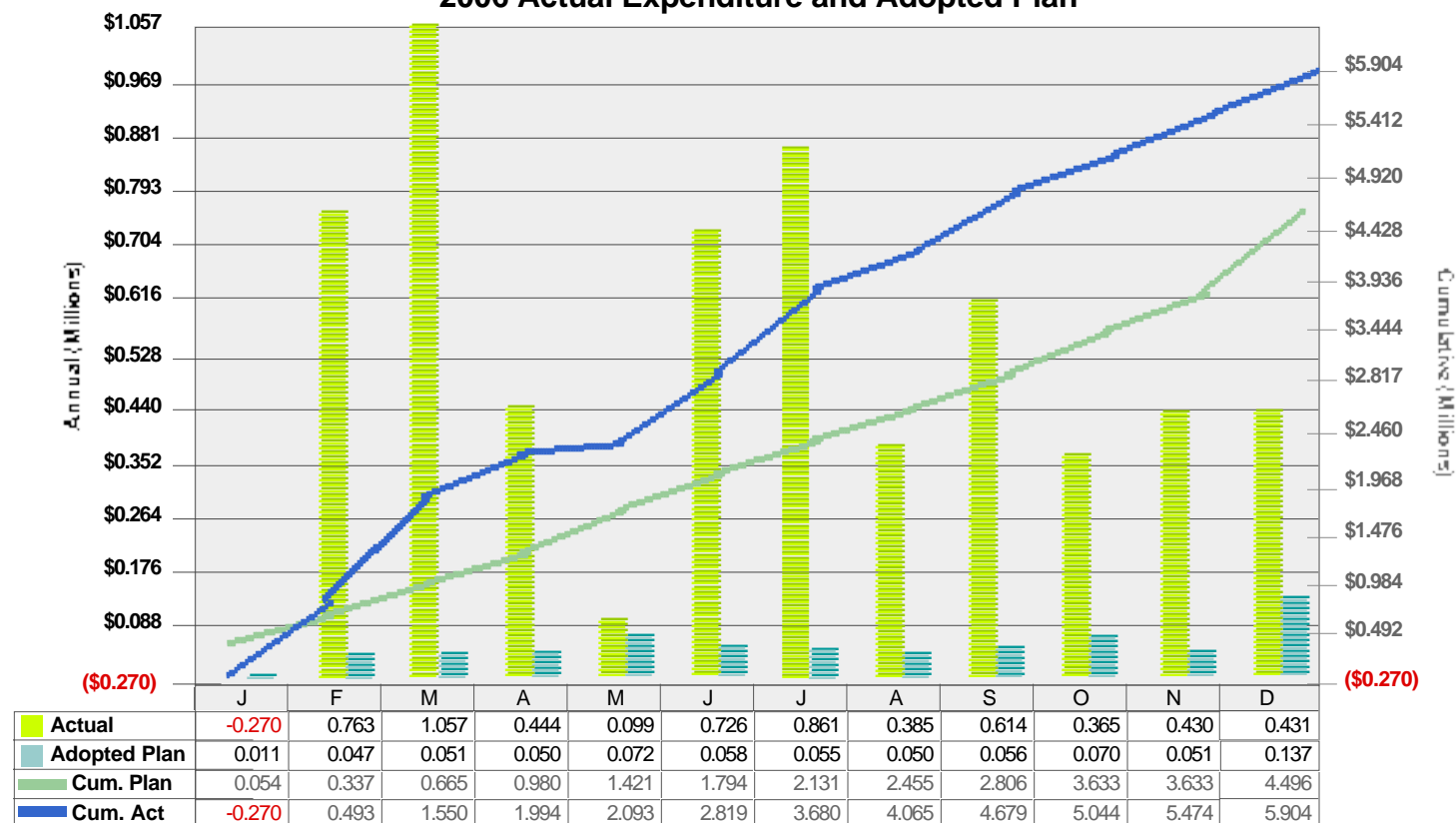
During 2006 modifications to the construction and weather delays required the construction contract amount to be increased. Change Orders Nos. 5-11 to the construction contract were issued in 2006. Some of the more significant changes were required to meet permit requirements, including additions to the fire control system for the administration and Electrical buildings, additional earthwork and landscaping of stockpile areas, and electrical panel revisions. Also some of the additional costs are related change orders issued in 2005 that added work related to the discovery of metal contaminated surface soils and revisions to the grading plan which totalled \$1.15 million.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Vashon Island Treatment Plant Upgrade	\$7,164,201	\$0	\$7,164,201	\$1,576,181	22%	12	\$8,740,382	\$8,657,863	28	99%
Vashon Island Treatment Plant Upgrade Project	\$599,681	\$1,617,764	\$2,217,445	\$382,312	17%	6	\$2,599,757	\$2,508,632	79	96%
Vashon WWTP Interim Improvements	\$500,000	\$0	\$500,000	\$50,000	10%	1	\$550,000	\$518,965	8	94%
Outfall Improvements Vashon Island Treatment Plant	\$204,454	\$0	\$204,454	\$0	0%		\$204,454	\$204,454	2	100%

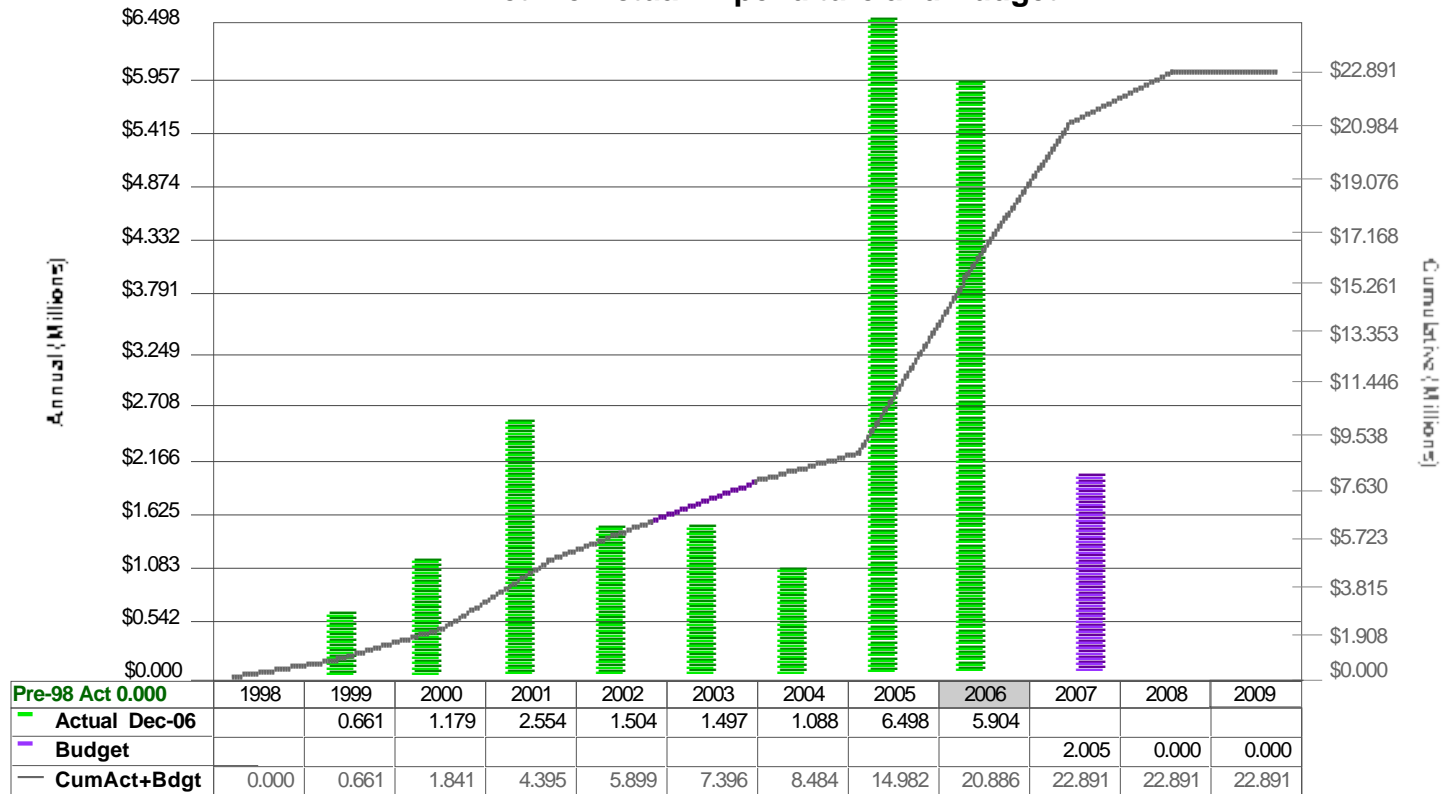
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423557 Carnation Treatment Plant



Project Description

This project will provide the City of Carnation with a new state of the art 0.43 mgd MBR treatment facility that will be owned and operated by King County. The plant will produce Class A reclaimed water that will initially be used to enhance existing wetlands at the Chinook Bend Natural Area. The project includes all work to implement this objective including planning, permitting, design and construction of a new treatment plant. The City of Carnation is replacing its on-site septic systems with a collection system to protect public health and the environment, achieve the city's comprehensive plan goals, and maintain and enhance community livability. The city is responsible for the design and construction of the local wastewater collection system. Construction of the sewage collection system is scheduled to be substantially complete by the end of 2007. Construction of Carnation Wastewater Treatment Facility is scheduled to be substantially complete in mid-2008. In 2006 an amendment to the Carnation Wastewater Facilities Plan was completed that will allow the new Carnation WWTF to produce reclaimed water that will be used to enhance wetlands at the Chinook Bend Natural Area.

Project Phase: 4 Implementation

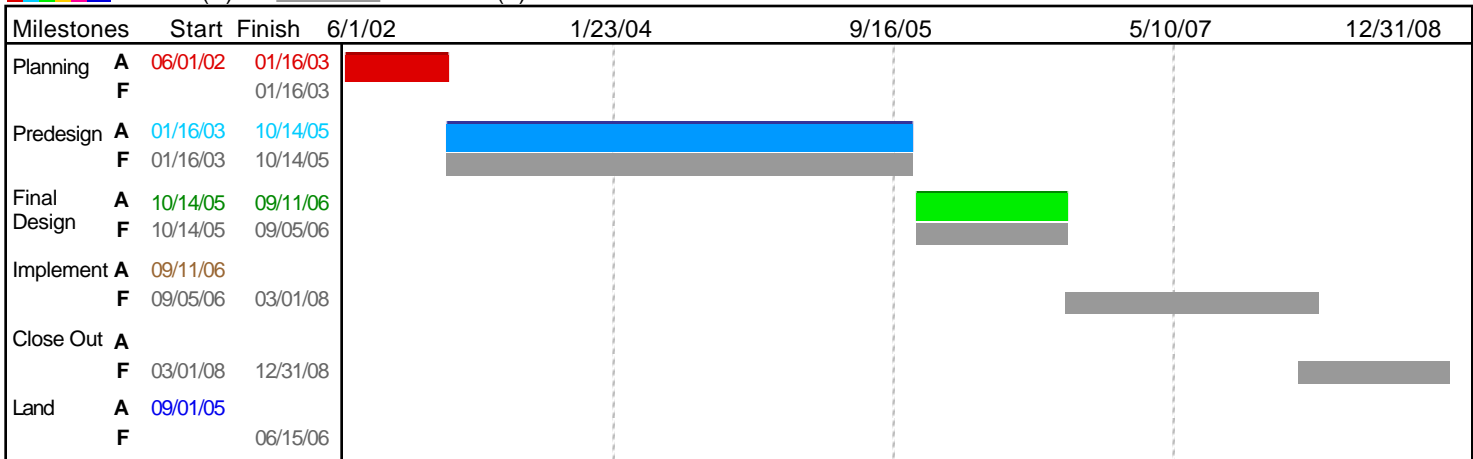


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

Severe weather in November and December 2006 caused some construction delays adding 20 days to the original contract. Construction is proceeding and is projected to be substantially complete in mid-2008.

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	1,495,874	4,461,445	3,021,551	1,508,233	9,056,733	14,660,230
Construction Contracts	1,495,874	3,946,445	2,841,951	1,508,233	8,011,283	13,740,678
Owner Furnished Equipment	0	515,000	179,600	0	1,045,450	919,552
NON-CONSTRUCTION	1,245,841	854,847	-221,237	5,299,236	4,746,384	5,257,920
Engineering	776,044	412,000	-275,684	3,385,413	2,585,673	2,807,368
Planning & Management Svcs.	150,844	0	175,000	183,012	13,099	761,213
Permitting & Other Agency Support	120,745	3,433	3,429	161,047	130,897	94,351
Right-of-Way	153,352	113,300	0	164,602	223,300	320,250
Misc. Services & Materials	63,481	9,059	-3,390	114,236	67,806	55,387
Staff Labor	-18,624	317,055	-120,592	1,290,926	1,725,609	1,219,351
Total \$	2,741,715	5,316,292	2,800,314	6,807,469	13,803,117	19,918,150

Cost/Budget Adjustments

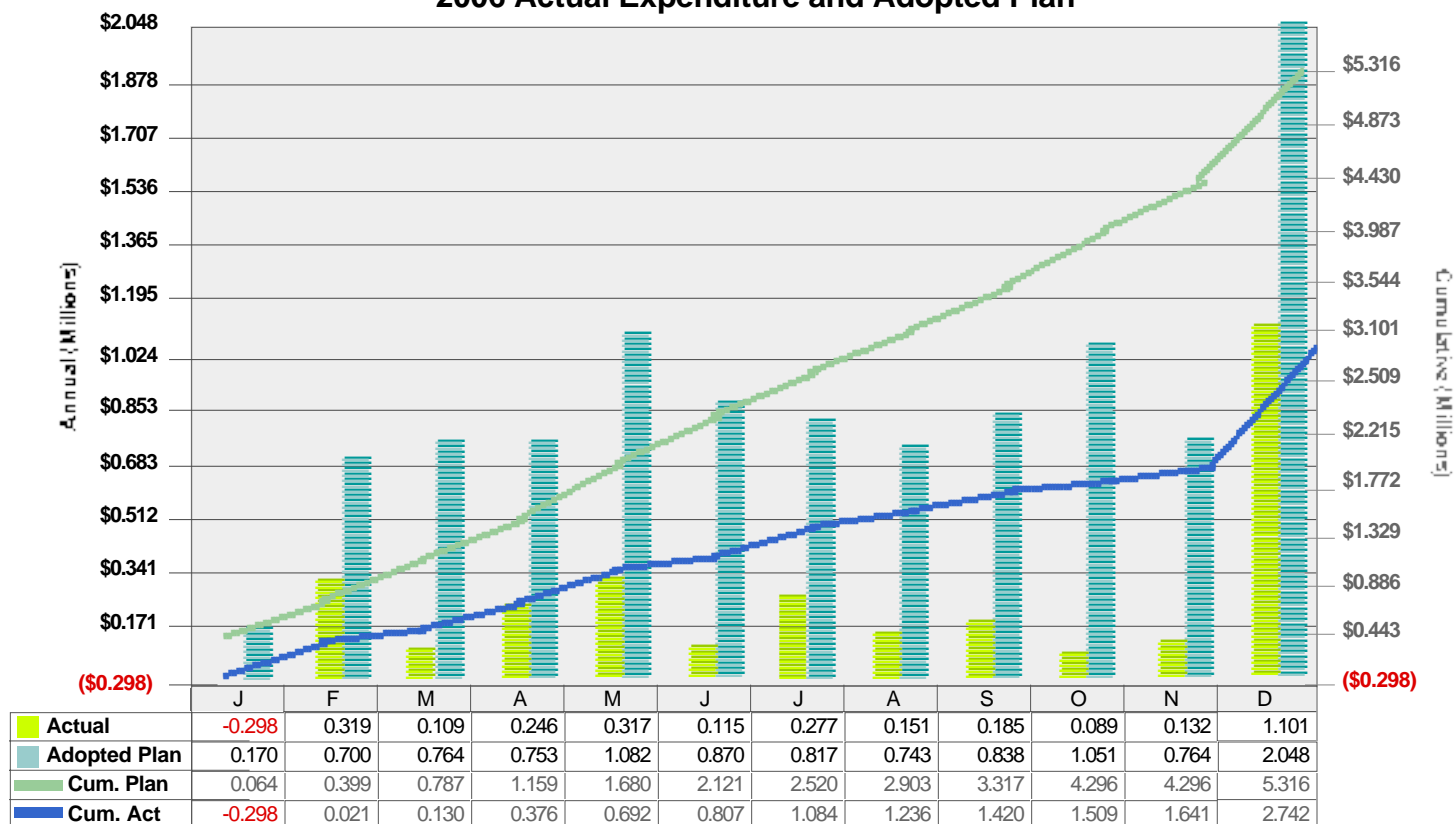
The project budget was increased as part of the 2007 budget process to \$19,918,150 to address higher than budgeted cost of the Carnation Wastewater Treatment Facility. Raising the elevation of the plant site to prevent flooding, changes to odor control to meet community concerns, and significant increases in the cost of construction materials contribute to the increase.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Carnation Wastewater Treatment Facility	\$11,794,500	\$0	\$11,794,500	\$1,315,161	11%	2	\$13,109,661	\$1,277,105	3	10%
Carnation Treatment Facility	\$629,804	\$2,587,391	\$3,217,195	\$864,753	27%	4	\$4,081,948	\$3,227,460	45	79%
Hazardous Materials Inspection, monitoring and abatement	\$200,000	\$0	\$200,000	\$0	0%	1	\$200,000	\$130,282	22	65%
Professional Archaeological Services	\$100,000	\$0	\$100,000	\$0	0%		\$100,000	\$47,015	17	47%

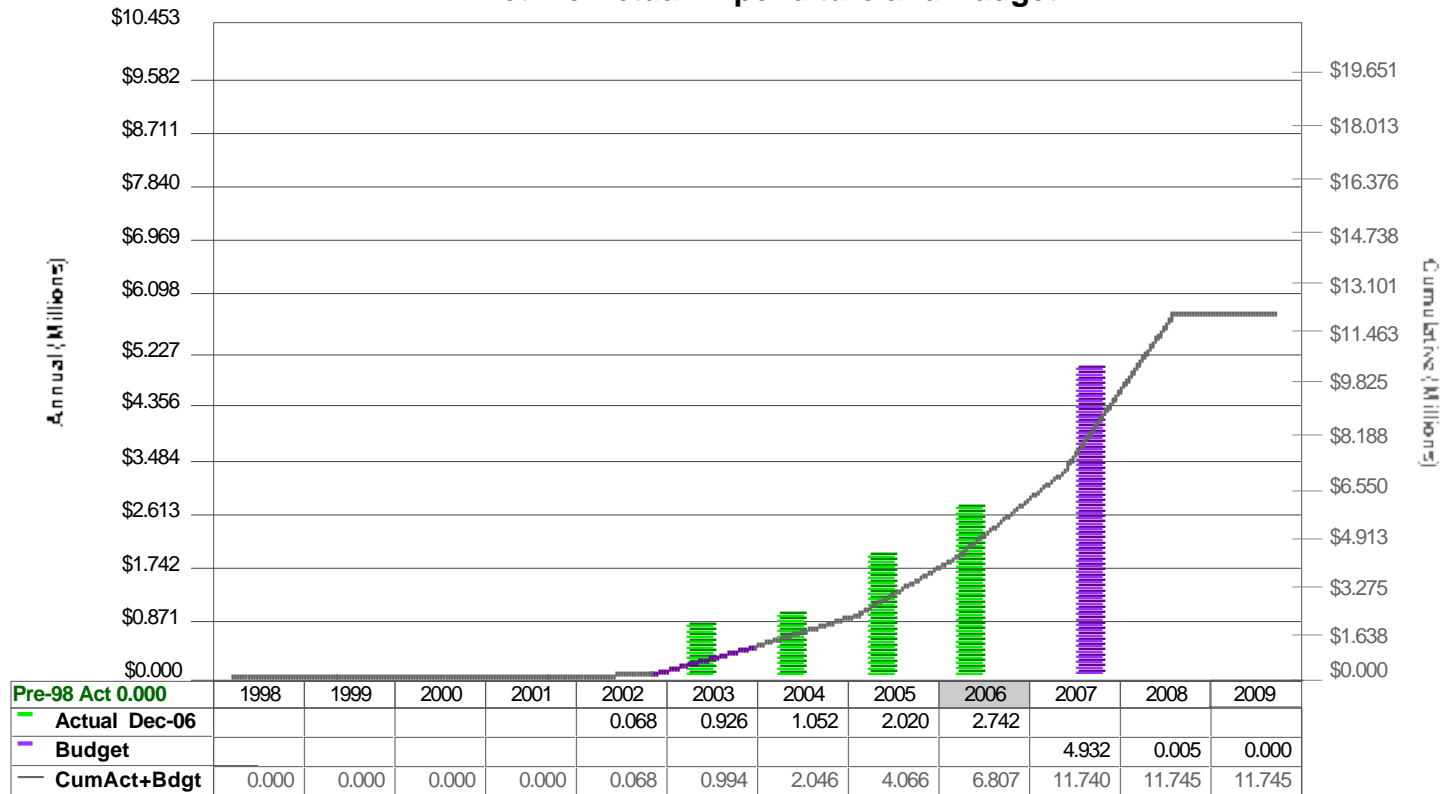
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423521 Bellevue Pump Station



Project Description

This will upgrade the Bellevue Pump Station from 8 mgd to 11 mgd. A new 5,500 feet 24-inch force main will be constructed to convey the flows from the pump station to the East Side Interceptor. For a major portion of the pipe installation, a Horizontal Direction Drill (HDD) method will be used. The pump station improvements include new pumps, new electrical, mechanical, and odor equipment, and better access for maintenance vehicles and workers.

Project Phase: 3 Final Design

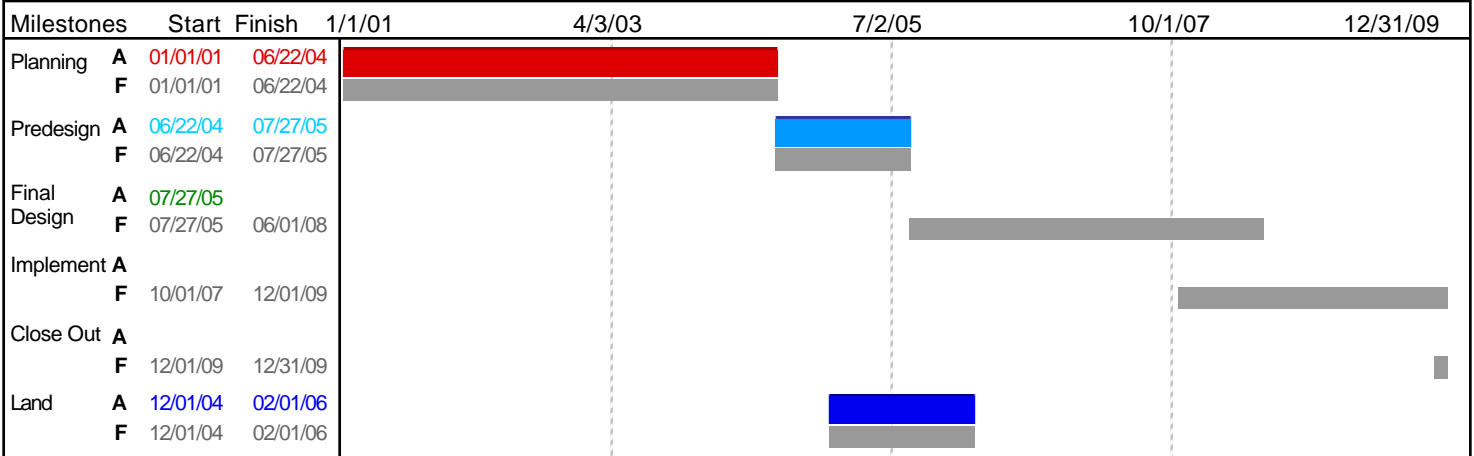


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

The Pump Station contract is expected to be advertised in Nov. 2007 and awarded in early 2008. The project remains scheduled for completion in 2010.

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	0	4,337,673	554,000	0	13,403,049	13,408,748
Construction Contracts	0	4,327,373	544,000	0	13,371,213	13,367,848
Outside Agency Construction	0	10,300	10,000	0	31,836	40,900
NON-CONSTRUCTION	2,657,924	924,008	1,979,319	4,945,791	4,720,294	5,793,431
Engineering	2,129,485	551,050	1,589,794	3,915,996	2,935,911	4,201,255
Planning & Management Svcs.	23,415	0	15,897	48,803	181	66,364
Permitting & Other Agency Support	60,972	0	48,667	62,134	150,636	92,917
Right-of-Way	32,850	7,725	40,000	37,850	117,225	45,000
Misc. Services & Materials	31,278	6,094	6,094	39,810	23,812	24,455
Staff Labor	379,925	359,139	278,866	841,197	1,492,530	1,363,440
PROJECT RESERVE	0	0	0	0	200,000	1,786,025
Project Reserve	0	0	0	0	200,000	1,786,025
Total \$	2,657,924	5,261,682	2,533,319	4,945,791	18,323,343	20,988,204

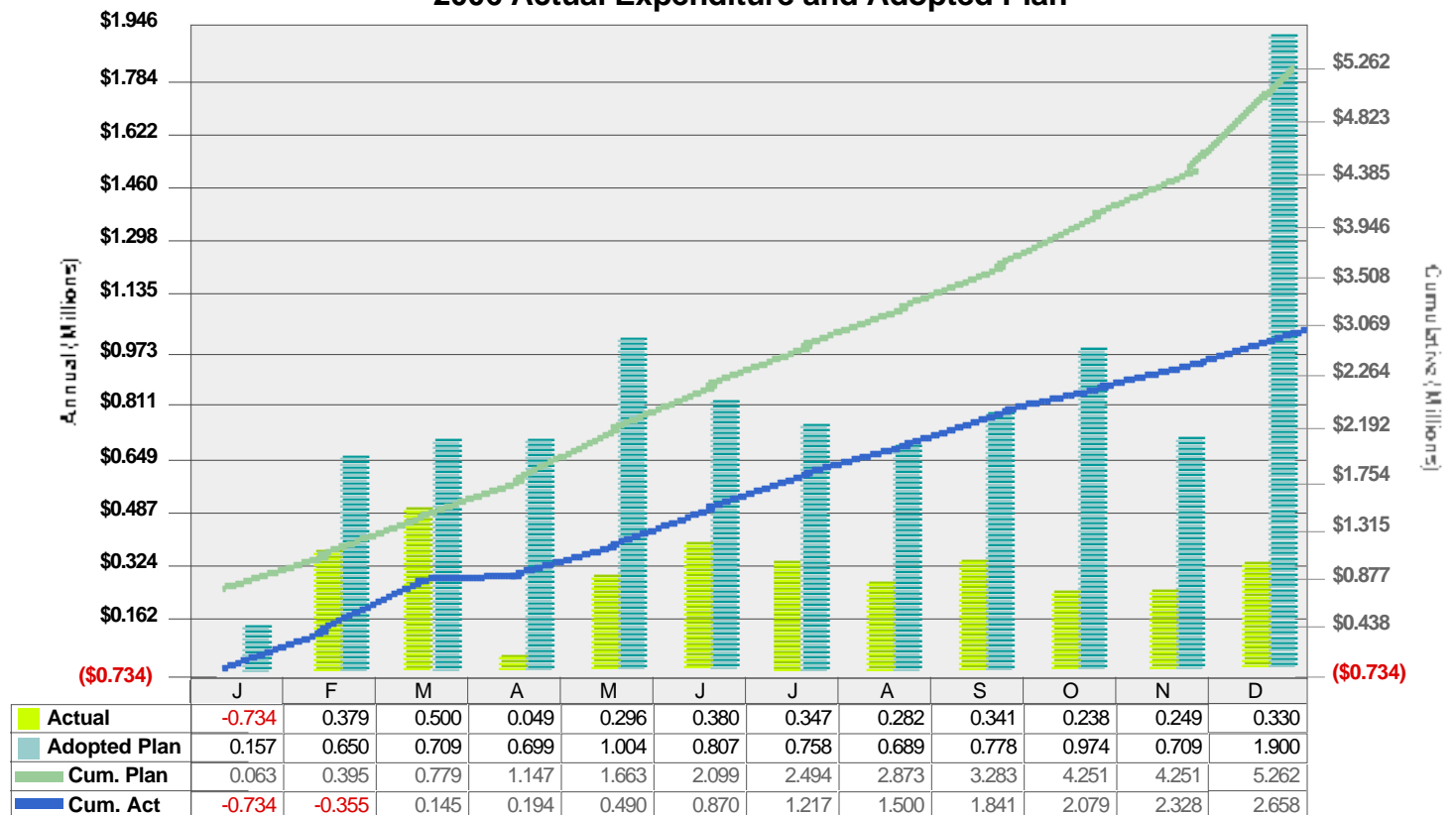
Cost/Budget Adjustments

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Engineering Services for the Bellevue Pump Station	\$775,015	\$3,614,297	\$4,389,312	\$0	0%	1	\$4,389,312	\$3,752,199	32	85%
E23015E										

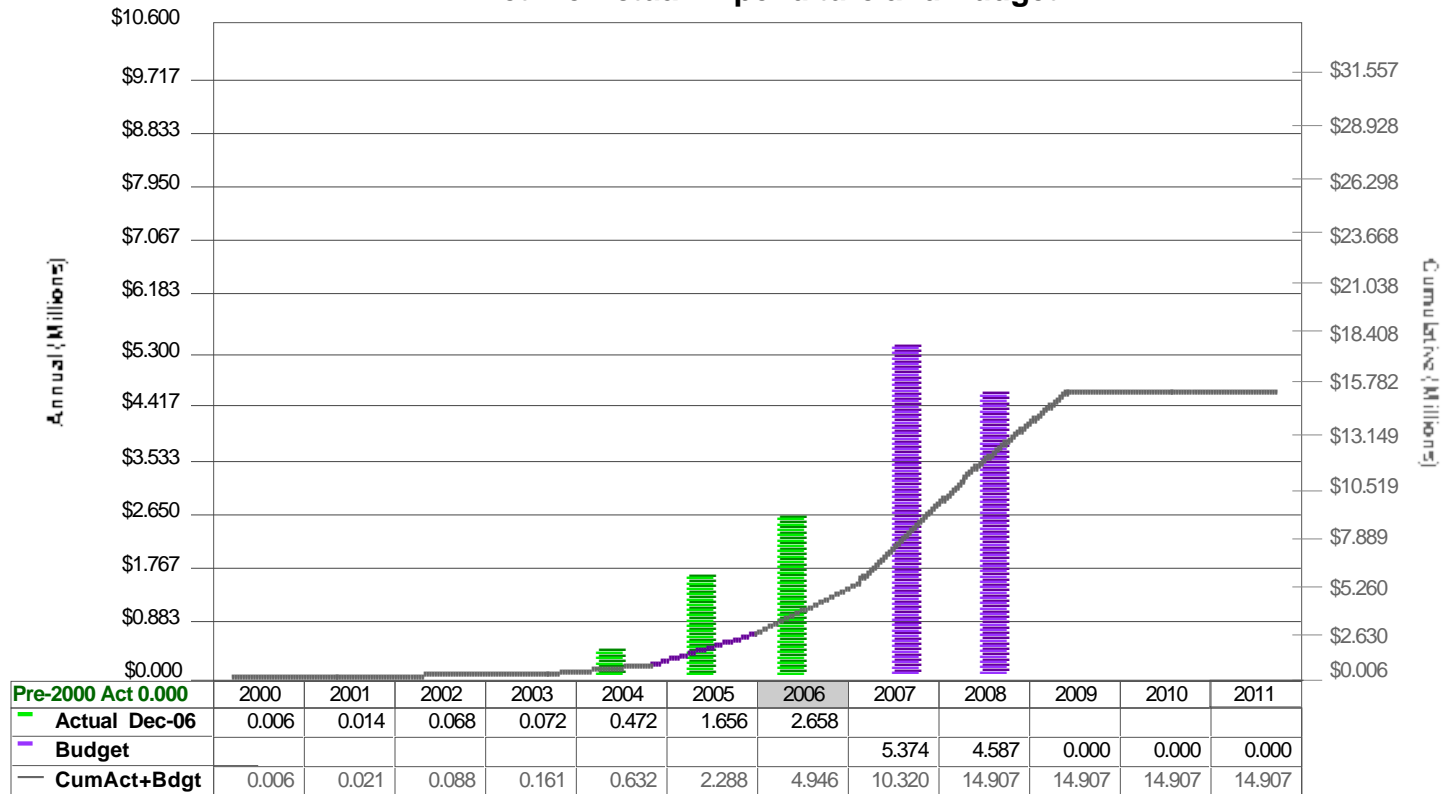
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



423373 CONVEYANCE SYSTEM IMPROVEMENTS

621 Black Diamond Storage Facility



Project Description

This project will design & construct approximately 600,000 gallons of wastewater flow equalization storage located in the City of Black Diamond. The facility is anticipated to be operational in 2010.

Project Phase: 2 Predesign

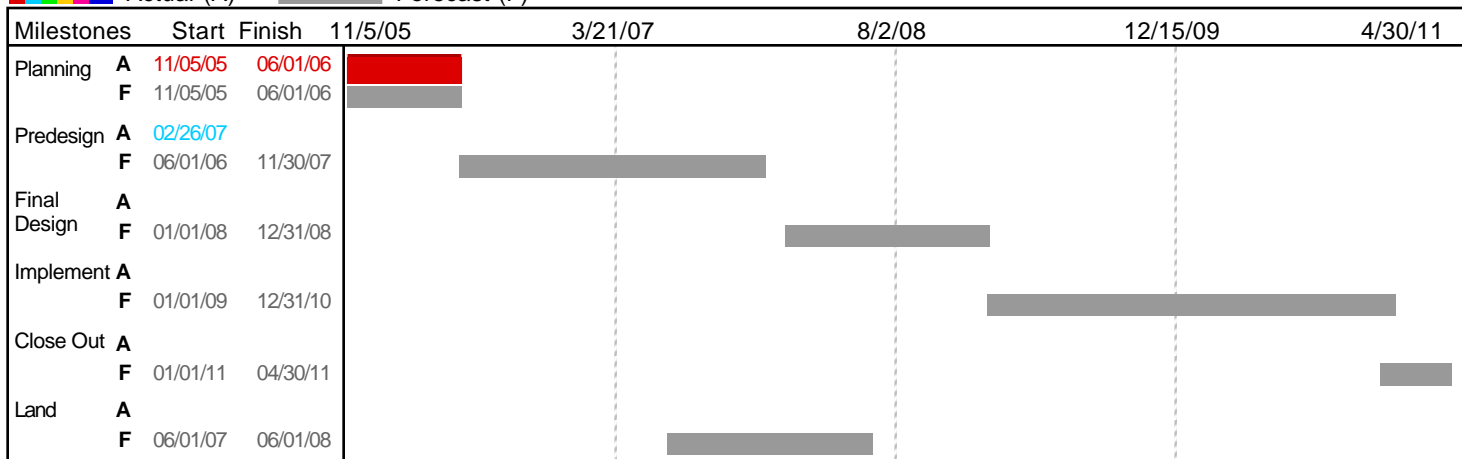


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

None at this time.

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	0	0	0	0	0	2,713,724
Construction Contracts	0	0	0	0	0	2,495,184
Outside Agency Construction	0	0	0	0	0	218,540
NON-CONSTRUCTION	26,912	0	213,156	49,567	261,297	2,347,542
Engineering	0	0	142,857	0	200,000	1,000,000
Planning & Management Svcs.	0	0	0	0	0	23,340
Permitting & Other Agency Support	0	0	0	0	0	106,090
Right-of-Way	0	0	0	0	0	424,360
Misc. Services & Materials	1,314	0	0	2,359	1,124	42,432
Staff Labor	25,599	0	70,298	47,208	60,172	751,320
PROJECT RESERVE	0	0	0	0	0	590,888
Project Reserve	0	0	0	0	0	590,888
Total \$	26,912	0	213,156	49,567	261,297	5,652,154

Cost/Budget Adjustments

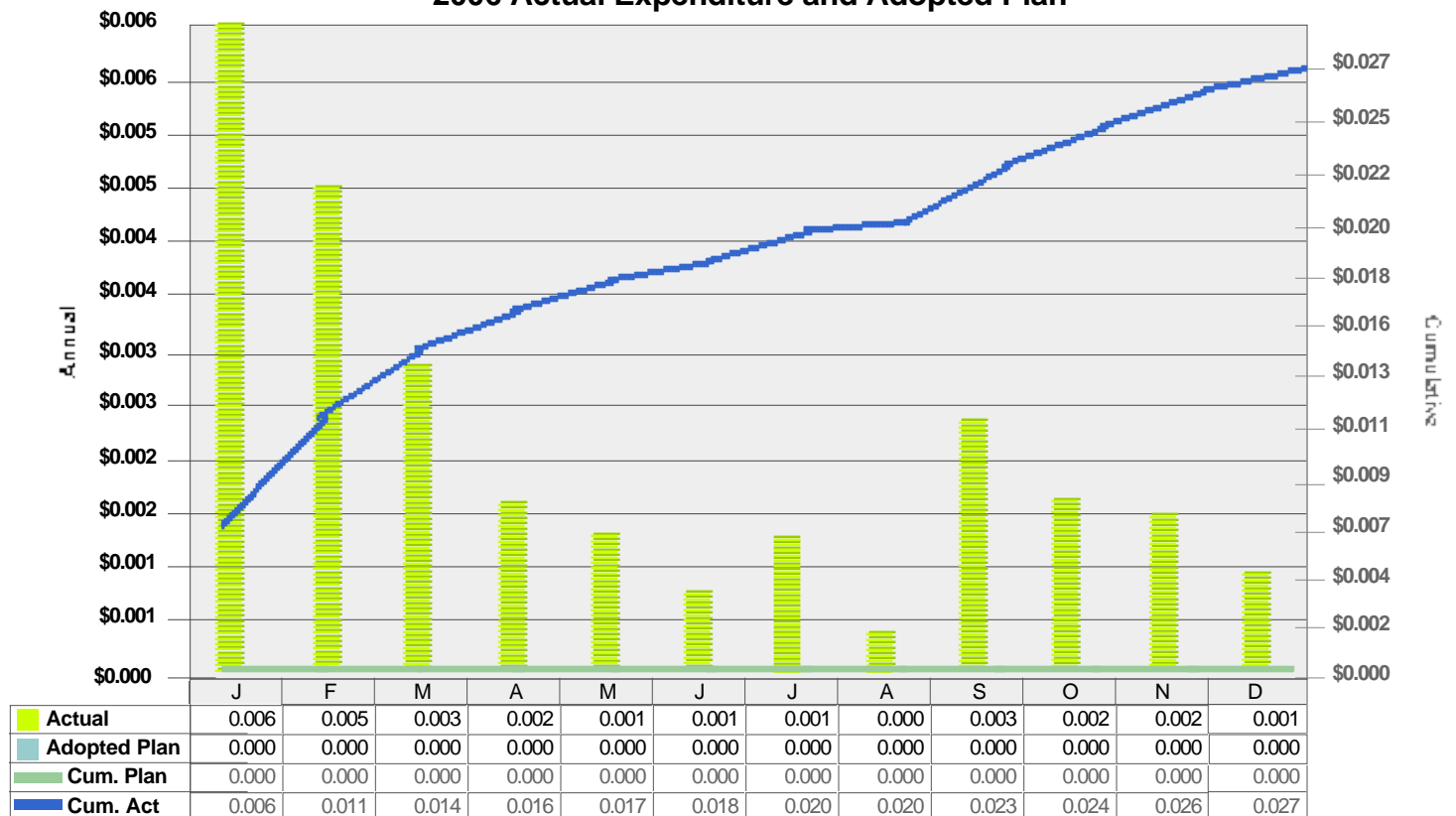
None at this time.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
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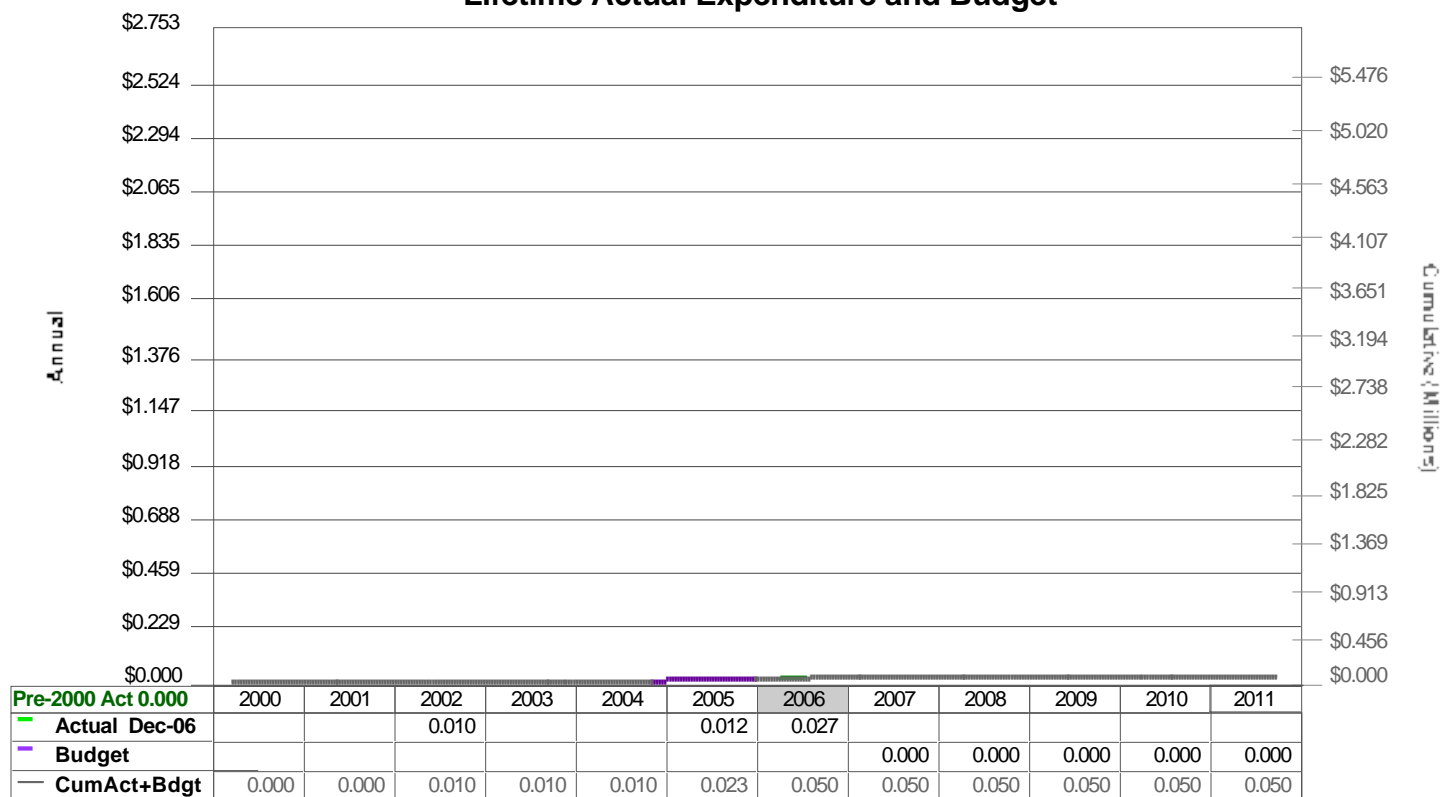
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423582 SW Interceptor (Kent/Auburn Conveyance Improvements)



Project Description

This project will construct approximately 5 miles of new sewer in Kent and Auburn ranging from 18 inch diameter to 54 inch diameter. There are 3 distinct project elements: 1) Auburn West Valley parallel interceptor, located in Pacific, Algona and Auburn, this pipe will run north and add capacity, 2) the Stuck River Trunk in Auburn will convey sewage flow away from the M-Street Trunk to the new parallel interceptor listed above, and 3) the Mill Creek Relief Sewer, in Kent, will remove some flow out of the Mill Creek Interceptor and convey it west to the Auburn Interceptor.

Project Phase: 2 Predesign

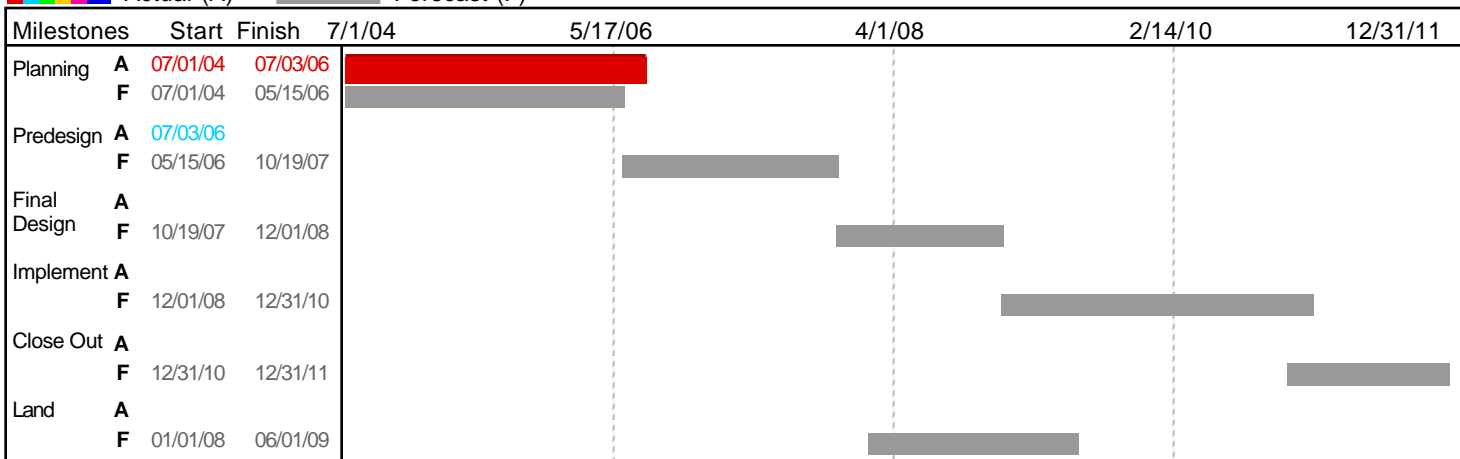


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

 Actual (A)
  Forecast (F)



Schedule Adjustments

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	0	0	0	0	28,875,404	31,967,529
Construction Contracts	0	0	0	0	28,875,404	31,967,529
Owner Furnished Equipment	0	0	0	0	0	0
Outside Agency Construction	0	0	0	0	0	0
Other Capital Charges	0	0	0	0	0	0
NON-CONSTRUCTION	643,479	2,113,668	1,083,668	745,206	10,889,660	10,737,423
Engineering	446,855	1,519,392	788,394	446,855	6,949,741	6,904,768
Planning & Management Svcs.	0	0	0	0	0	0
Permitting & Other Agency Support	0	0	0	0	200,449	208,187
Right-of-Way	0	0	0	0	200,449	1,039,270
Misc. Services & Materials	5,860	0	0	11,868	330	6,008
Staff Labor	190,764	594,275	295,274	286,484	3,538,690	2,579,191
PROJECT RESERVE	0	0	0	0	5,364,273	1,857,075
Project Reserve	0	0	0	0	5,364,273	1,857,075
ADJUSTMENTS	0	0	0	0	0	0
Adjustments	0	0	0	0	0	0
CREDITS AND REVENUES	0	-515,000	0	0	64,637	0
Credits and Revenues	0	-515,000	0	0	64,637	0
Total \$	643,479	1,598,668	1,083,668	745,206	45,193,974	44,562,028

Cost/Budget Adjustments

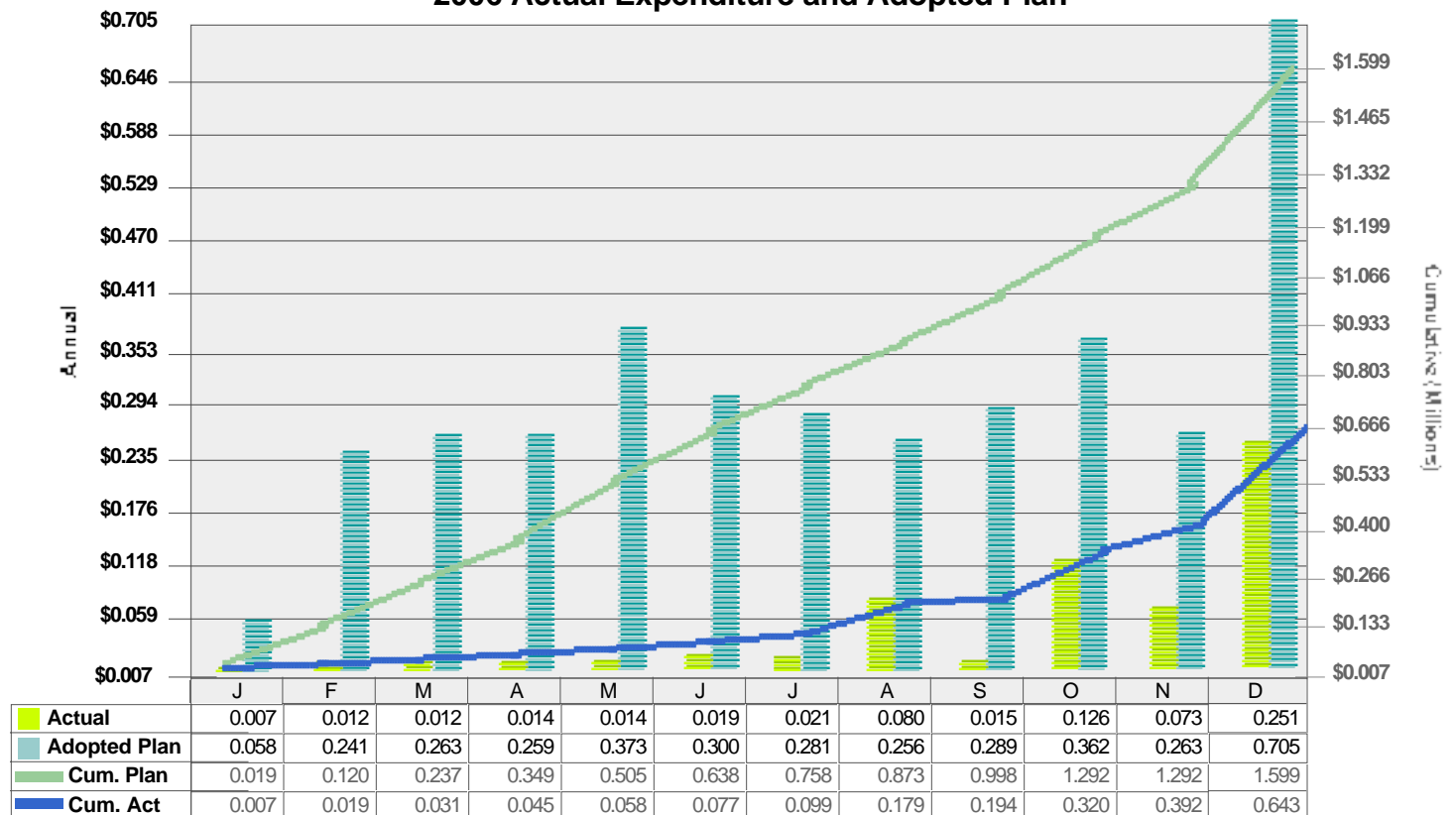
None at this time.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Engineering Services for Kent Auburn Conveyance System E53009E	\$2,686,967	\$0	\$2,686,967	\$0	0%		\$2,686,967	\$452,649	6	17%

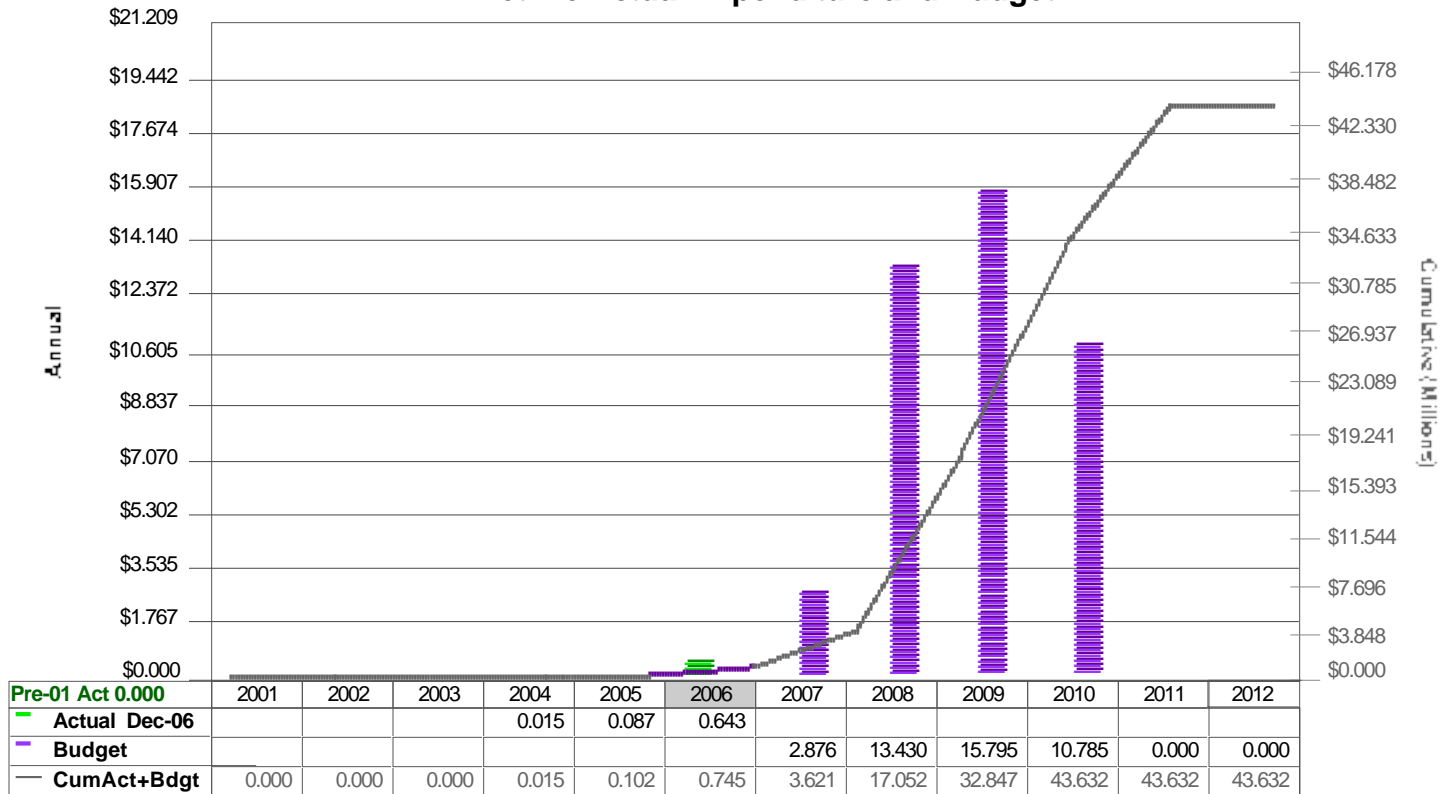
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



423365 HIDDEN LAKE PS/BOEING CREEK TRUNK

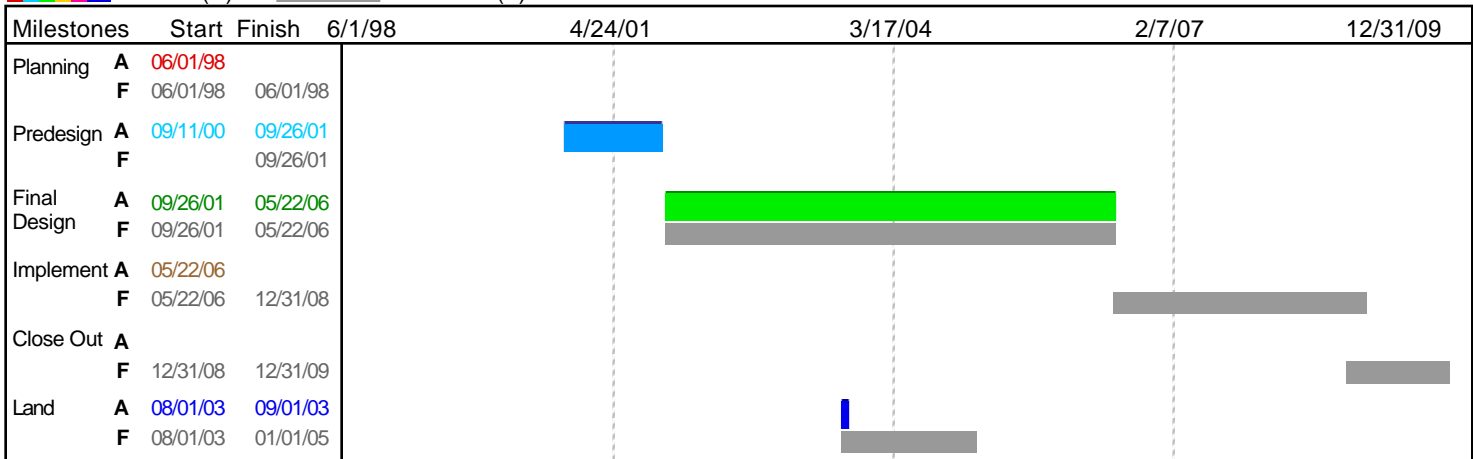


Project Phase: 4 Implementation

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

none

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	8,511,406	10,425,017	2,421,631	8,672,810	25,837,411	27,572,644
Construction Contracts	8,498,896	10,425,017	2,336,886	8,660,300	25,837,411	26,539,828
Outside Agency Construction	0	0	84,745	0	0	1,032,816
Other Capital Charges	12,510	0	0	12,510	0	0
NON-CONSTRUCTION	1,589,406	1,412,255	643,870	8,131,187	8,718,157	10,091,741
Engineering	212,027	971,484	274,178	4,269,524	6,691,190	5,140,453
Planning & Management Svcs.	337,303	0	199,354	409,701	1,207	1,676,343
Permitting & Other Agency Support	90,616	0	7,037	1,251,567	53,816	1,212,527
Right-of-Way	0	145,402	0	149,633	331,835	149,633
Misc. Services & Materials	94,443	13,733	0	230,297	128,354	133,988
Staff Labor	855,018	281,636	163,301	1,820,465	1,511,755	1,778,798
PROJECT RESERVE	0	0	0	0	0	1,201,970
Project Reserve	0	0	0	0	0	1,201,970
CREDITS AND REVENUES	0	-515,000	-101,613	0	79,581	-465,834
Credits and Revenues	0	-515,000	-101,613	0	79,581	-465,834
Total \$	10,100,812	11,322,272	2,963,888	16,803,997	34,635,150	38,400,522

Cost/Budget Adjustments

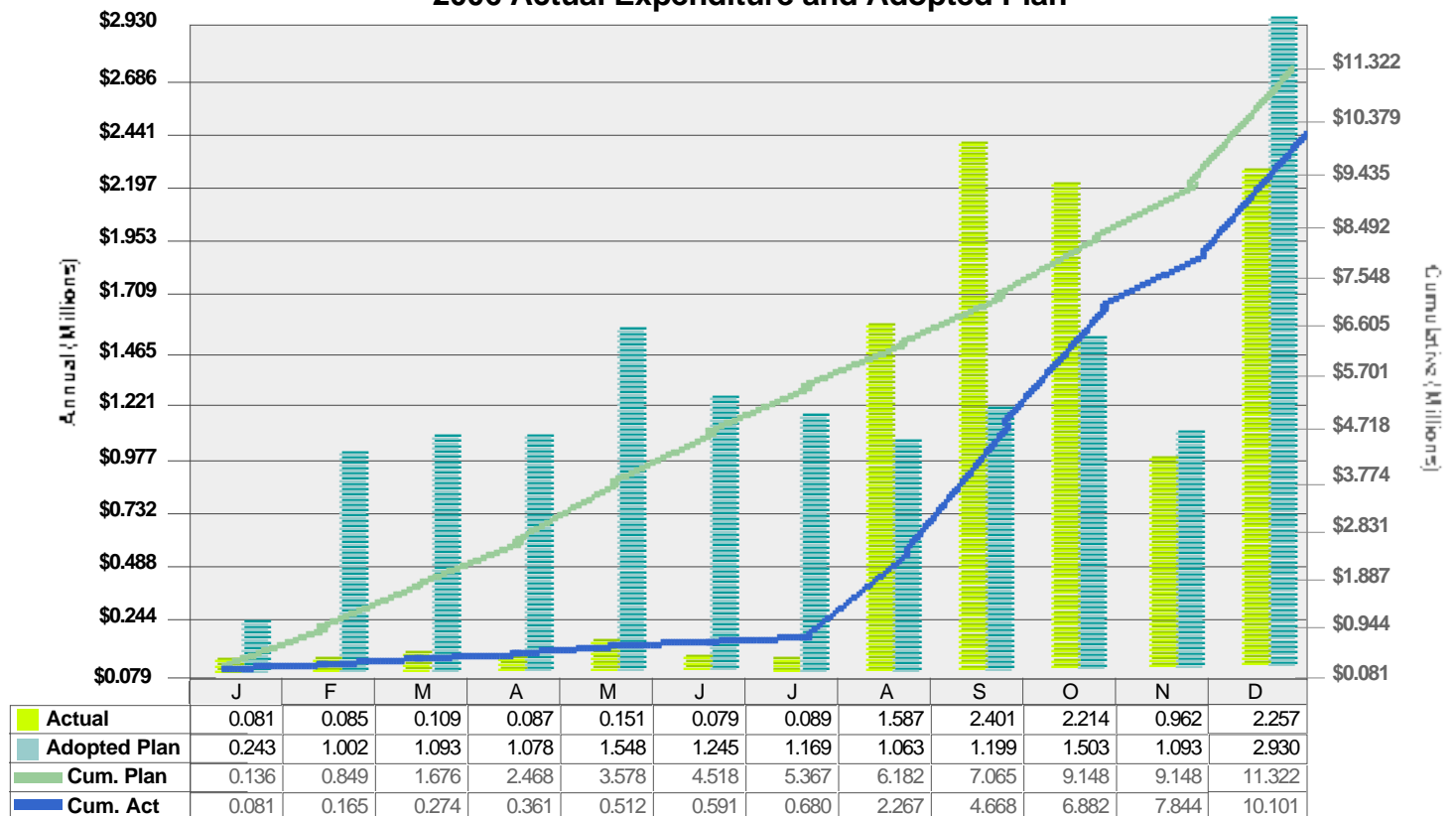
Construction started in May of 2006. The contractor accelerated the construction of the Boeing Creek Storage Facility during the summer of 2006 and completed the majority of it by October 2006. The accelerated construction work also increased the amount of construction management staff costs expended. Also, the contractor purchased all of the new plastic trunk sewer pipe in 2006. These factors resulted in a significantly higher 2006 budget expenditure.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Hidden Lake Project C53108C	\$20,929,000	\$0	\$20,929,000	\$17,493	0%	1	\$20,946,493	\$5,230,408	3	25%
Hidden Lake Pump Station E03036E	\$2,699,191	\$0	\$2,699,191	\$2,381,297	88%	5	\$5,080,487	\$4,186,258	56	82%
Construction Management Services for the Hidden P43017P	\$1,500,071	\$0	\$1,500,071	\$0	0%		\$1,500,071	\$211,177	8	14%
Mitigation for Hidden Lk PS and boeing Creek Trunk Sewer MOA 3415	\$1,100,000	\$0	\$1,100,000	\$0	0%		\$1,100,000	\$0		0%
Permanent Underground Svcs for Hidden Lake PS Agreement/SCL	\$60,000	\$0	\$60,000	\$0	0%		\$60,000	\$0		0%

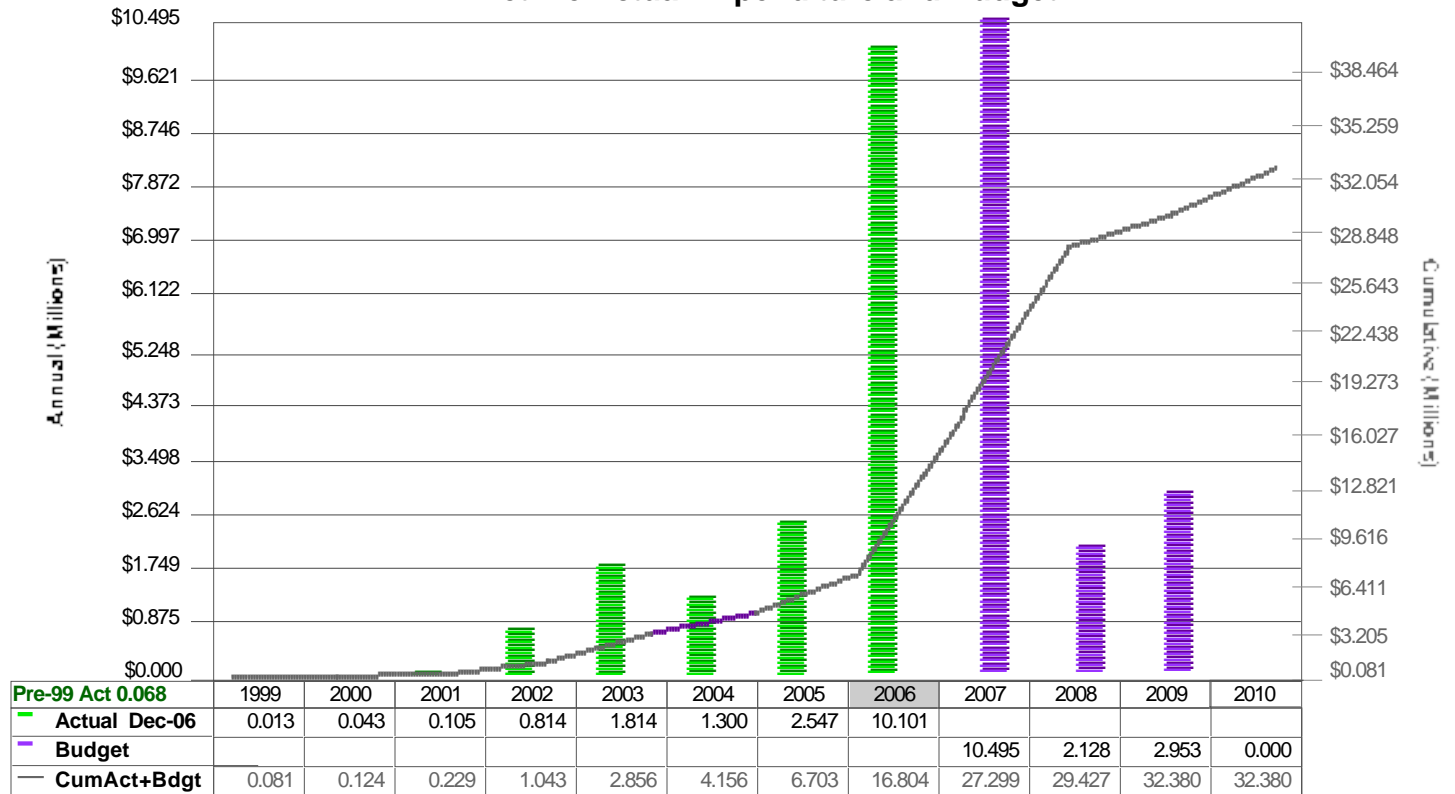
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423494 Fairwood Interceptor (formerly Madsen Creek)



Project Description

This project abandoned existing erosion prone and unstable Madsen Creek sewer pipeline which conveyed sewage from the Fairwood area near SE Renton to the Maple Valley trunk and replaced it with a deep gravity sewer in a new alignment, outside the Madsen Creek ravine. The new alignment follows Fairwood Blvd. for several blocks, and includes an inverted siphon underneath the west Madsen Creek tributary, from the Fairwood Elementary School to the Bonneville Power Administration right of way near 140th Avenue. This new deep gravity interceptor avoids the need for a pump station to be located in the Fairwood area. The project was divided into 3 major phases: Phase 1 - Inverted Siphon, Phase 2A Pipe bursting, and Phase 2B Microtunneling. Construction was substantially complete in December 2006.

Project Phase: 4 Implementation

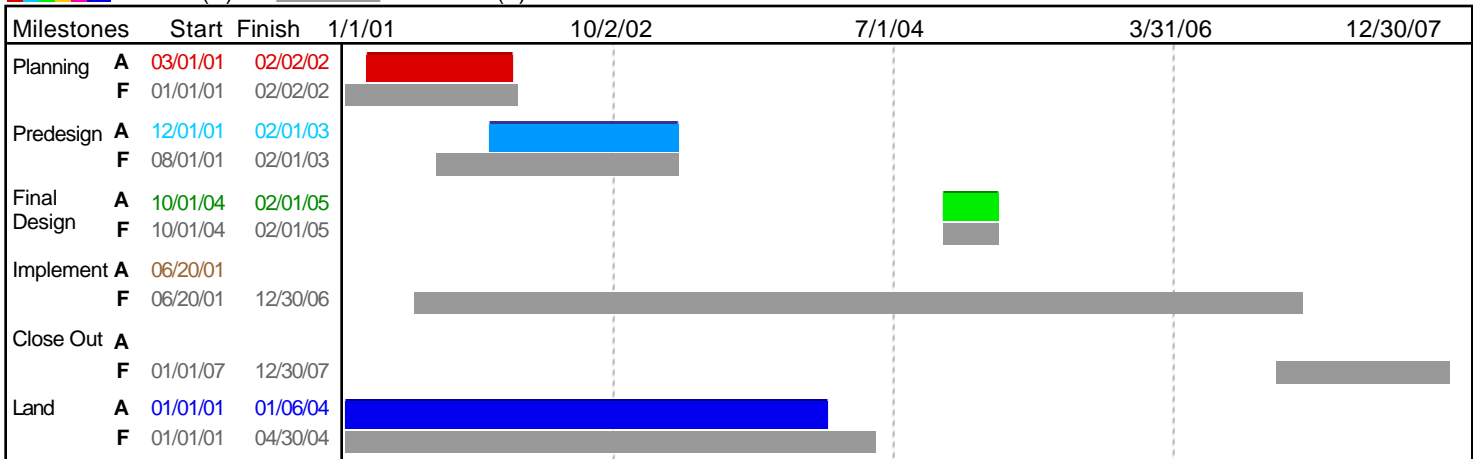


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

N/A

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	5,068,407	6,372,073	5,656,859	16,529,526	17,457,149	17,117,978
Construction Contracts	5,030,532	6,371,880	5,656,666	16,491,525	17,456,644	17,117,660
Other Capital Charges	37,875	193	193	38,001	506	319
NON-CONSTRUCTION	849,774	388,921	1,044,112	4,394,219	4,122,450	4,588,557
Engineering	179,751	129,809	565,000	2,281,521	2,329,632	2,666,770
Planning & Management Svcs.	47,813	0	0	64,062	15,384	16,248
Permitting & Other Agency Support	2,638	0	0	337,275	433,186	334,637
Right-of-Way	32,952	7,210	7,210	231,134	235,440	205,392
Misc. Services & Materials	35,957	20,892	20,892	77,170	62,964	62,106
Staff Labor	550,663	231,010	451,010	1,403,057	1,045,844	1,303,405
CREDITS AND REVENUES	0	-1,030,000	0	0	30,900	0
Credits and Revenues	0	-1,030,000	0	0	30,900	0
Total \$	5,918,181	5,730,994	6,700,971	20,923,745	21,610,499	21,706,537

Cost/Budget Adjustments

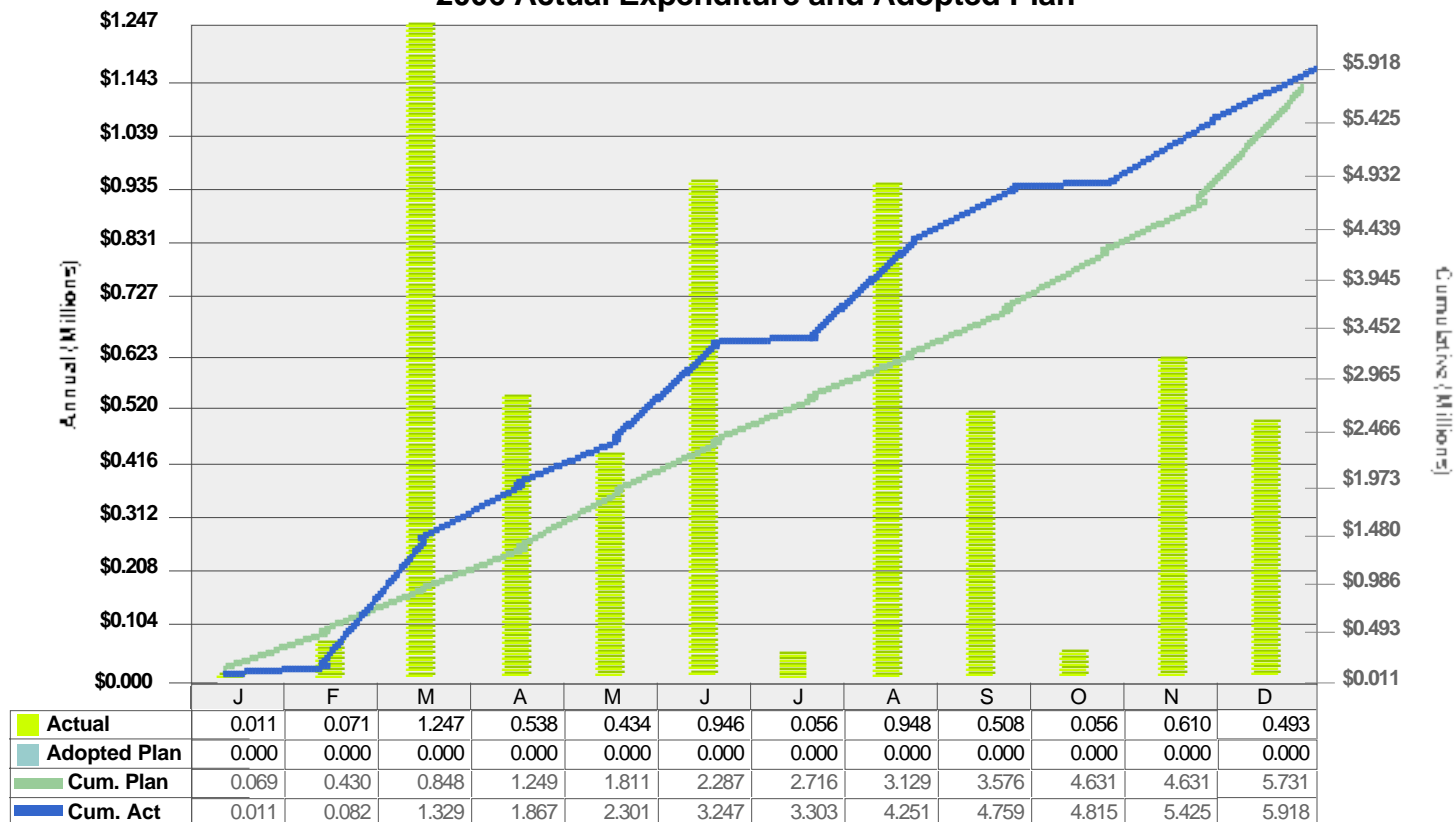
- Approximately \$1 million was deleted from overall project contingency in early 2006 as construction was proceeding apace and bid came in low.
- Some unspent budget for engineering will be transferred to construction contingency to pay for change orders, including additional road and sidewalk restoration that was originally unanticipated. Overall change order rate is very low to date.
- No overall increase to budget is anticipated at this time, and no change to overall yearly cash flow estimates.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Fairwood Interceptor Phase 2B, Microtunneling	\$7,699,750	\$0	\$7,699,750	\$14,452	0%	2	\$7,714,202	\$7,150,387	15	93%
Fairwood - Evaluation and Design of Madsen Creek	\$385,376	\$2,058,746	\$2,444,123	\$189,325	8%	3	\$2,633,447	\$2,146,805	74	82%

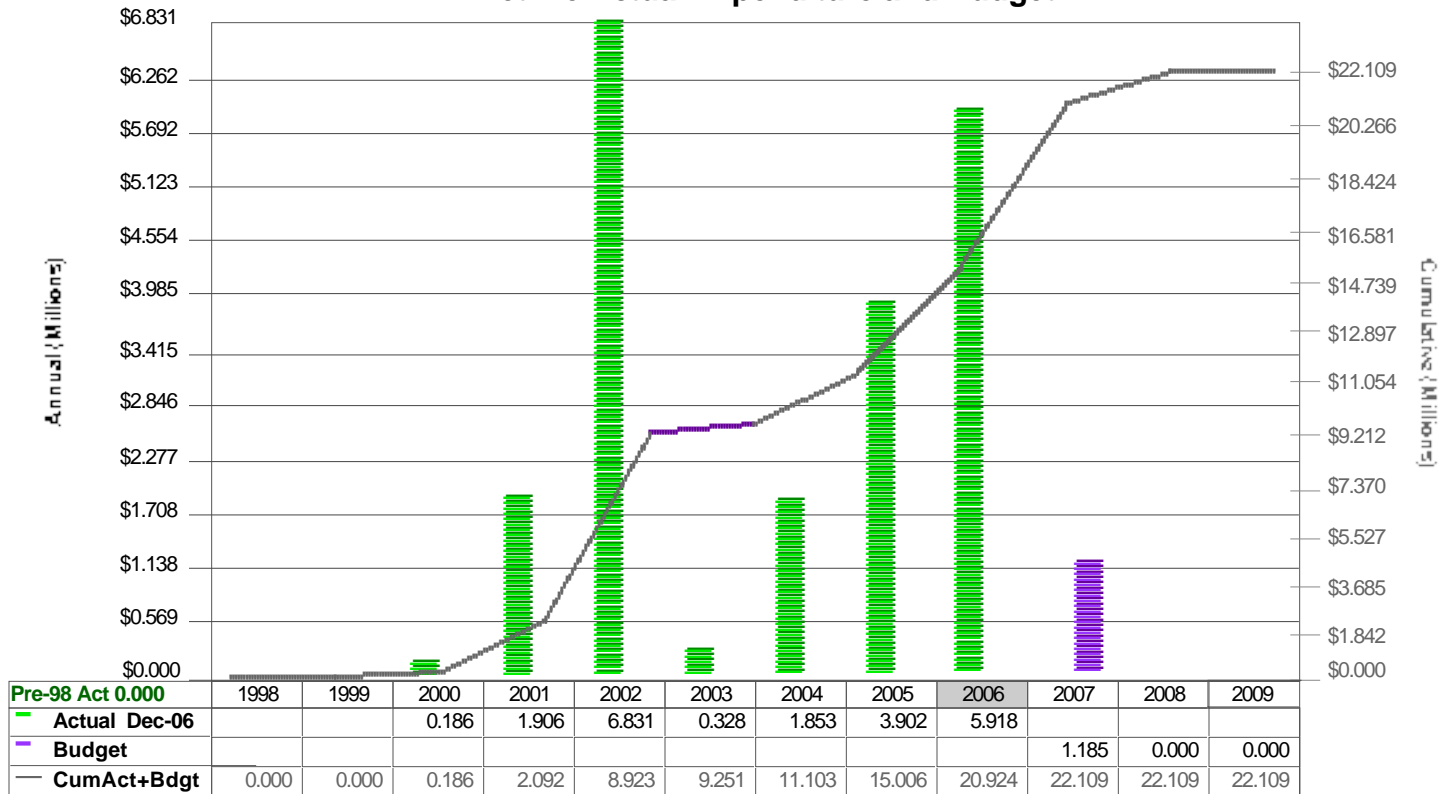
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423406 JUANITA BAY PS - MODIFICATIONS



Project Description

This project will construct a 30.6 million gallon per day wastewater pump station to increase the capacity of and replace an aging pump station. The existing and future pump stations are located at the intersection of NE Juanita Drive and 93rd Ave NE in Kirkland. The station will include four pairs of two-stage pumps, odor control and chemical addition systems for odor and corrosion prevention, equipment lifting devices, equipment sound attenuation, and a standby generator. A large portion of the facility will be in an underground 86-foot diameter, 50-foot deep circular structure. The underground structure will be constructed with 4-foot diameter reinforced concrete secant (interlocking) piles. This project will also evaluate the capacity and alignment of the existing Juanita Force Mains which operate in tandem with the pump station.

Project Phase: 4 Implementation

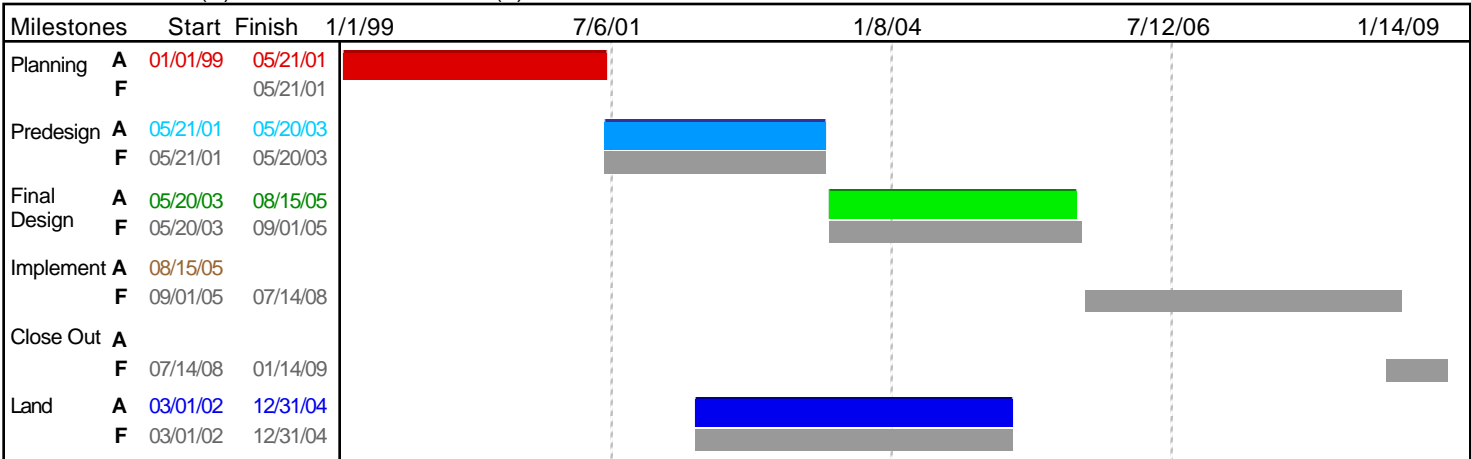


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

- NA

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	6,887,028	7,135,180	9,905,690	8,507,574	24,152,079	22,964,516
Construction Contracts	6,865,870	7,053,810	9,792,000	8,486,416	23,911,274	22,684,448
Outside Agency Construction	0	0	15,000	0	0	30,450
Other Capital Charges	21,158	81,370	98,690	21,158	240,805	249,618
NON-CONSTRUCTION	1,913,048	1,057,824	1,783,031	10,525,414	11,583,473	14,012,401
Engineering	783,309	504,863	1,050,600	6,279,148	6,861,058	8,670,261
Planning & Management Svcs.	33,876	0	0	104,680	50,261	70,804
Permitting & Other Agency Support	42,108	1,567	1,567	93,395	202,435	214,318
Right-of-Way	0	0	0	1,541,751	1,516,377	1,541,751
Misc. Services & Materials	47,270	0	5,000	123,525	20,043	86,405
Staff Labor	1,006,485	551,393	725,864	2,382,915	2,933,299	3,428,862
CREDITS AND REVENUES	0	-515,000	0	0	31,363	0
Credits and Revenues	0	-515,000	0	0	31,363	0
Total \$	8,800,077	7,678,004	11,688,721	19,032,988	35,766,916	36,976,917

Cost/Budget Adjustments

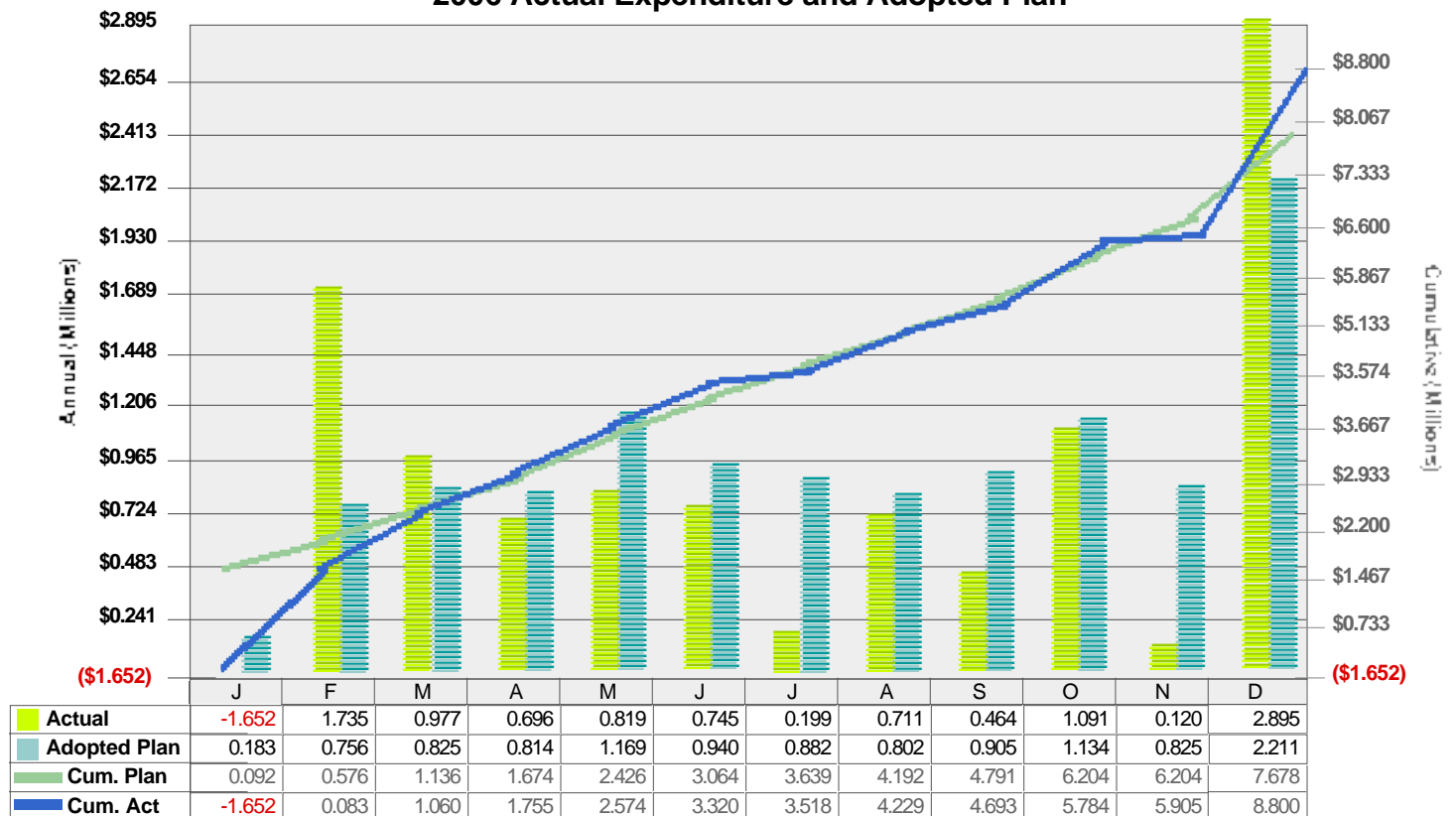
NA

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Juanita Bay Pump Station Replacement	\$18,988,000	\$0	\$18,988,000	\$28,957	0%	2	\$19,016,957	\$7,896,688	12	42%
Eng'g Services for Juanita Bay & Forcmain Update	\$1,849,354	\$4,725,798	\$6,575,153	\$0	0%	1	\$6,575,153	\$6,295,200	68	96%

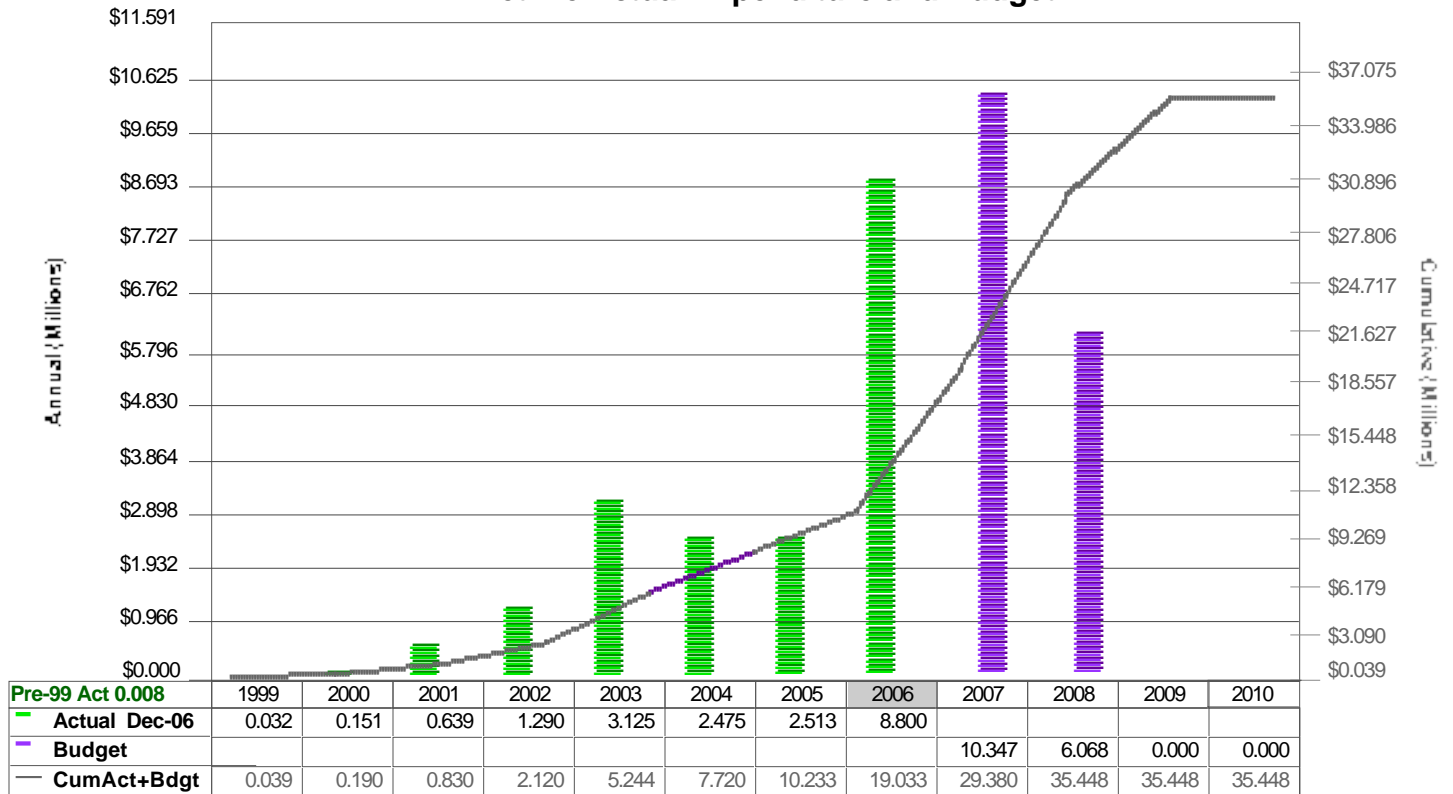
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



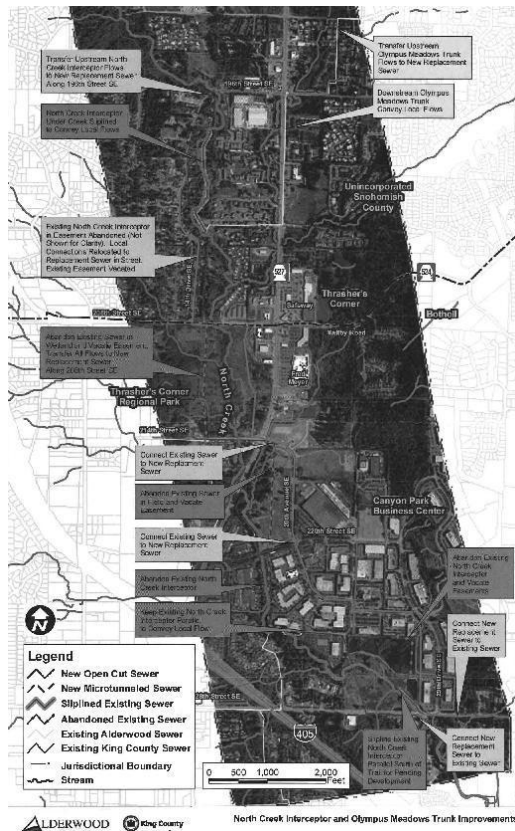
Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



DECEMBER 2006

423596 North Creek Pipeline



Project Description

Improvements to the North Creek Interceptor are required to provide regional wastewater conveyance service to support current and future growth in the North Creek basin. The project area begins in the vicinity of 196th Street S.E. in unincorporated Snohomish County and extends south to 228th Street S.E. within the City of Bothell.

The improvements will consist of 16,400 feet of gravity sewer pipes, ranging from 21 inches to 48 inches that replace the existing pipes. The sewer pipes will be installed using open cut construction, with trenchless construction methods used for special crossings where the pipe crosses areas with high potential for traffic or environmental impacts.

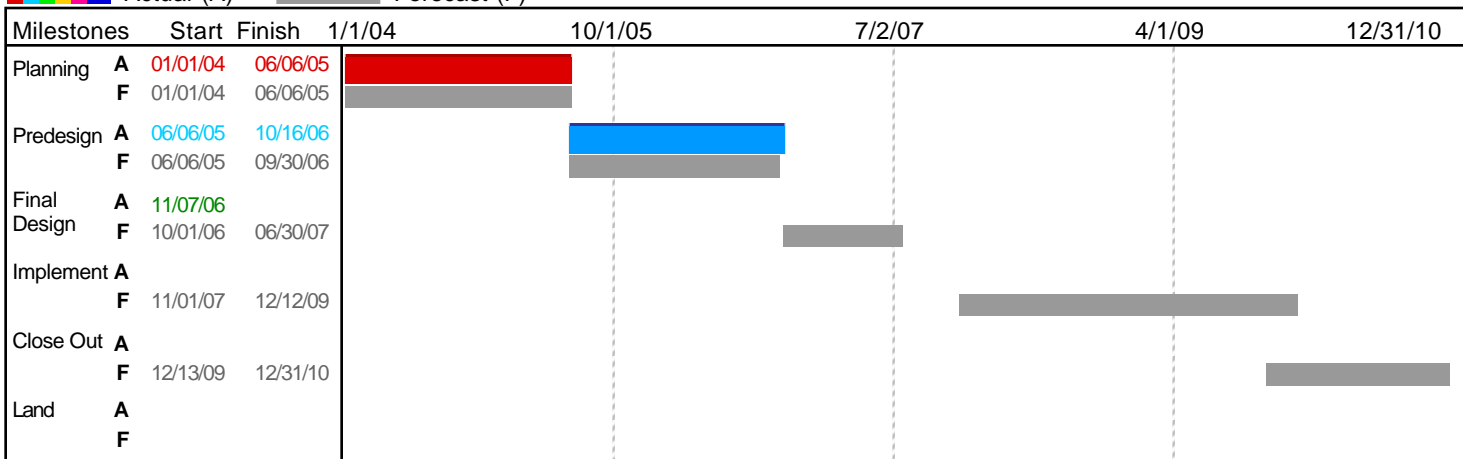
Project Phase: 3 Final Design



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Actual (A) Forecast (F)



Project completion schedule remains as 12/2009.

Cost Summary	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
Expenses						
CONSTRUCTION	0	0	3,073,094	0	22,554,833	23,010,304
Construction Contracts	0	0	3,073,094	0	20,407,572	20,863,042
Outside Agency Construction	0	0	0	0	2,147,261	2,147,262
NON-CONSTRUCTION	1,094,195	2,937,217	2,649,483	1,094,195	5,730,655	5,343,423
Engineering	974,799	1,236,000	1,736,000	974,799	2,091,085	2,072,995
Right-of-Way	0	906,400	500,000	0	1,139,798	1,151,990
Misc. Services & Materials	5,396	0	0	5,396	0	0
Staff Labor	114,000	794,817	413,483	114,000	2,499,771	2,118,438
Total \$	1,094,195	2,937,217	5,722,577	1,094,195	28,285,488	28,353,727

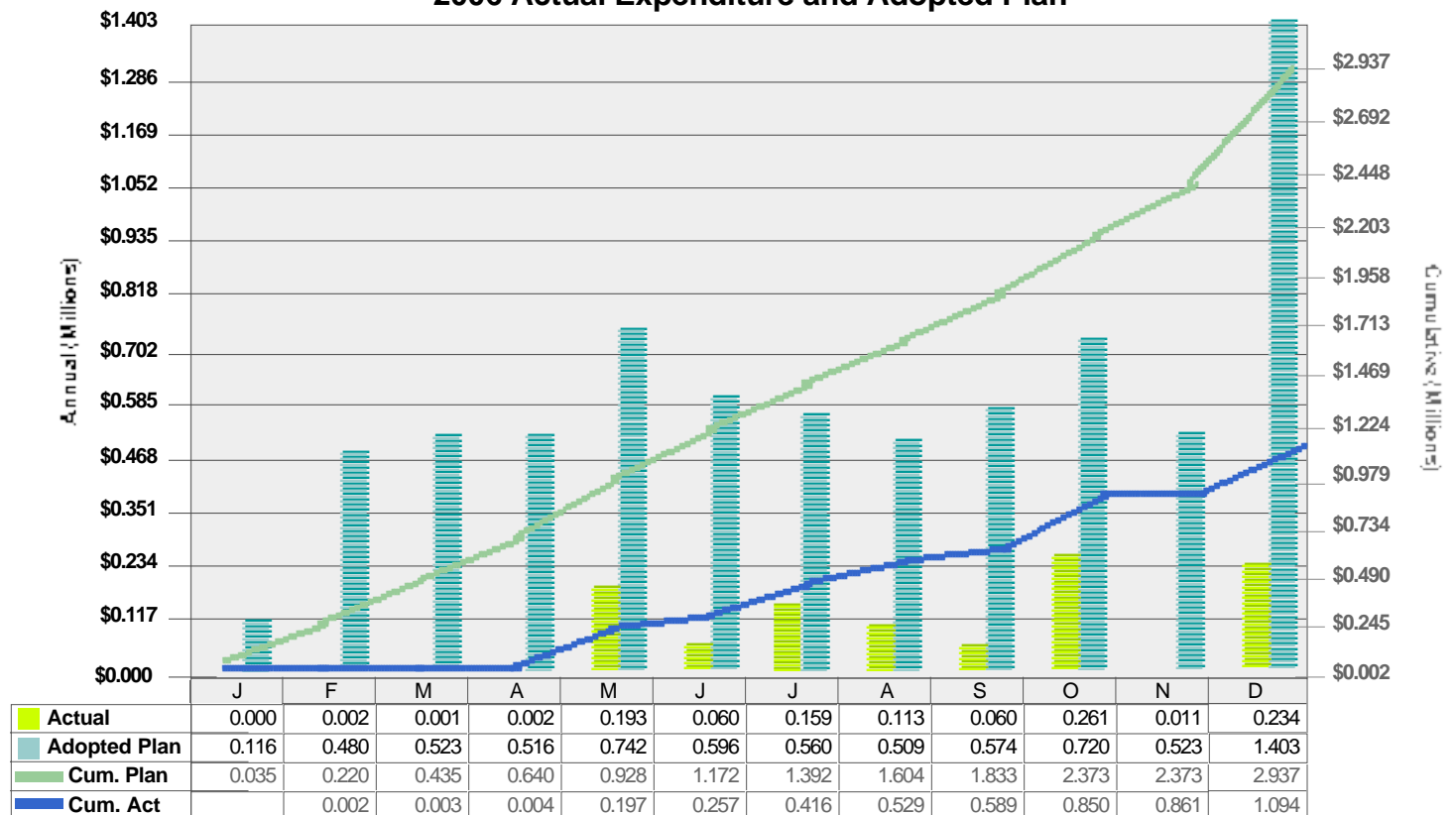
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Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
North Creek Interceptor Improvements	\$31,100,000 A-NCI-2005	\$0	\$31,100,000	\$0	0%		\$31,100,000	\$1,309,805	18	4%

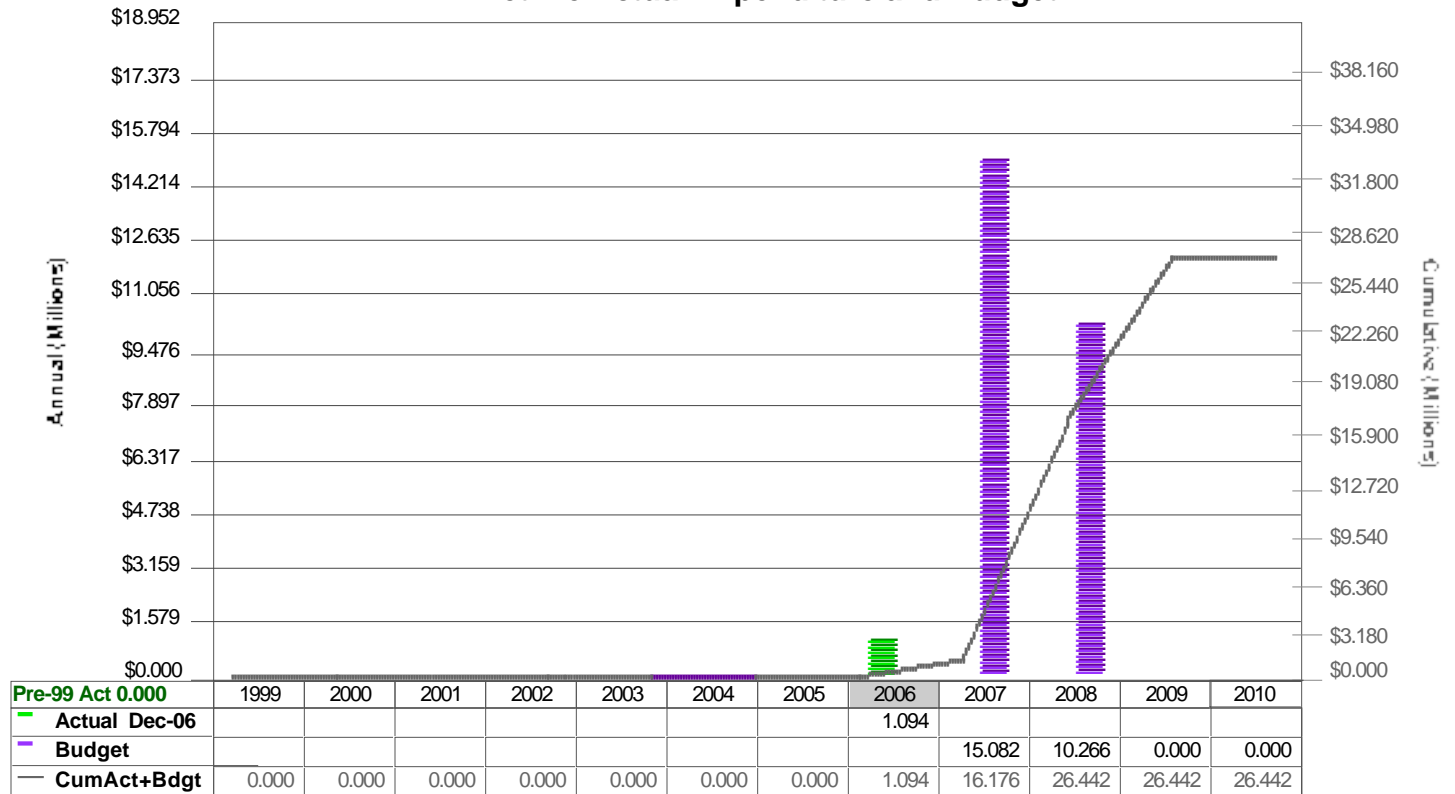
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



423518 Pacific Pump Station



Project Description

This project will design and construct a new pump station and forcemain with a firm 5 year peak flow of 5.9 mgd and a maximum 20 year peak flow of 7 mgd. The project will include standby power, odor control, and improved telemetry in the new facility. The existing package-type pump station was constructed in 1970 and King County assumed responsibility for it in 1974. The existing capacity is approximately 3 mgd. The pump station discharges to a 12" forcemain, 2,940 linear feet to the Algona Pacific Interceptor. This project was completed in early 2007.

Project Phase: 4 Implementation

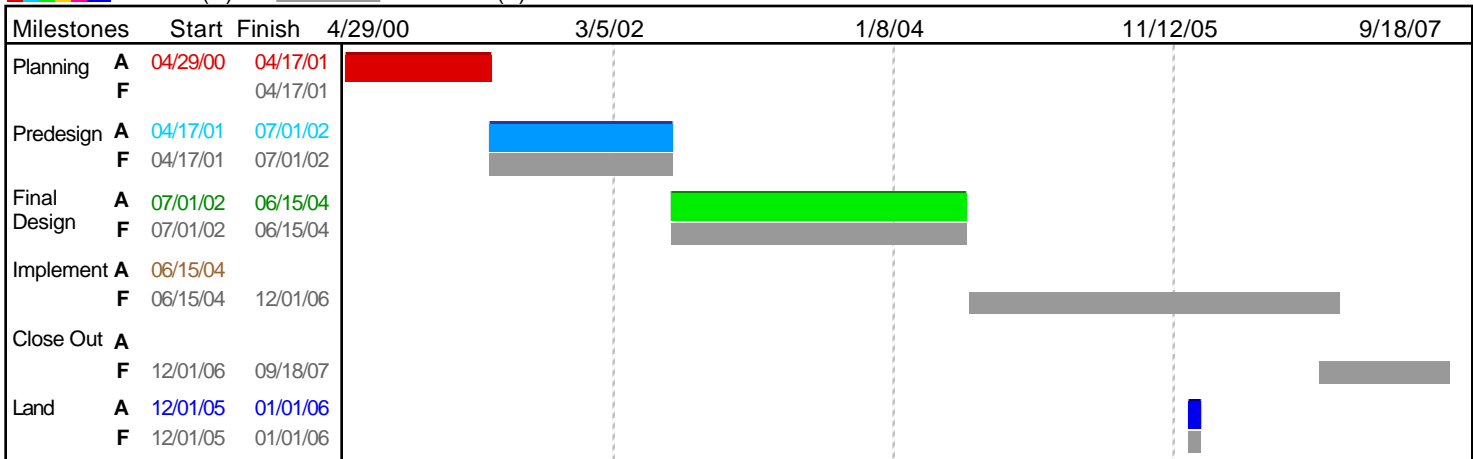


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

No change.

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	1,812,368	2,520,894	1,882,444	4,475,952	4,376,672	5,020,566
Construction Contracts	1,791,724	2,520,894	1,882,444	4,454,007	4,376,466	5,019,266
Other Capital Charges	20,644	0	0	21,944	206	1,300
NON-CONSTRUCTION	577,250	458,553	515,553	2,925,206	2,723,095	2,901,338
Engineering	106,720	240,999	240,999	1,620,484	1,793,713	1,754,764
Planning & Management Svcs.	10,247	0	0	27,953	1,399	17,707
Permitting & Other Agency Support	891	0	0	51,253	24,492	46,991
Right-of-Way	300	0	0	10,200	9,300	9,900
Misc. Services & Materials	13,174	0	0	36,529	16,011	23,355
Staff Labor	445,919	217,554	274,554	1,178,787	878,181	1,048,622
PROJECT RESERVE	0	213,617	30,769	0	708,674	102,077
Project Reserve	0	213,617	30,769	0	708,674	102,077
Total \$	2,389,618	3,193,064	2,428,766	7,401,158	7,808,441	8,023,982

Cost/Budget Adjustments

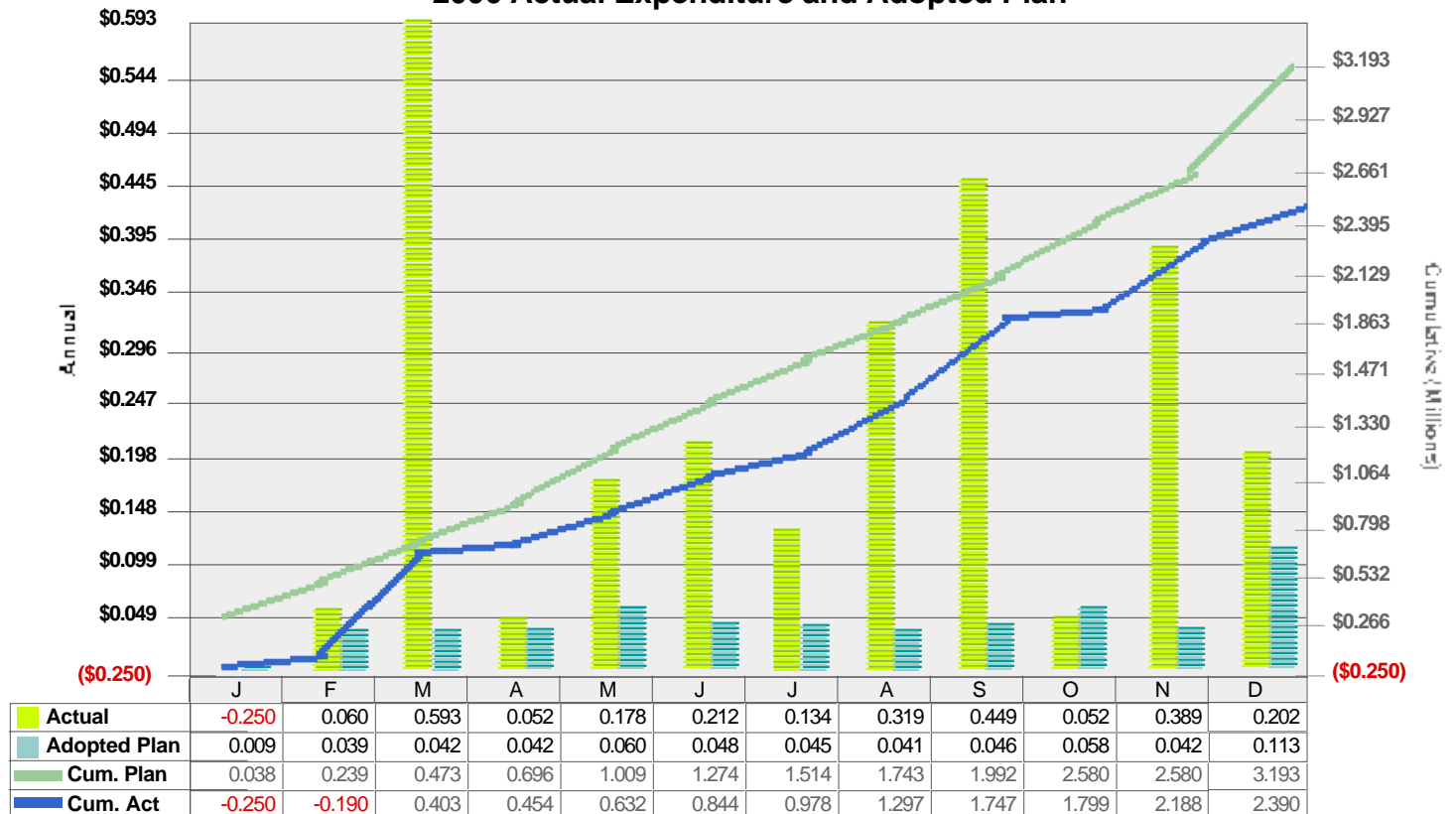
No change.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Pacific Pump Station	\$3,792,143	\$0	\$3,792,143	\$548,652	14%	8	\$4,340,795	\$4,016,291	22	93%
Engineering Services for Pacific Pump Station	\$1,351,537	\$373,756	\$1,725,293	\$0	0%	2	\$1,725,293	\$1,623,951	68	94%

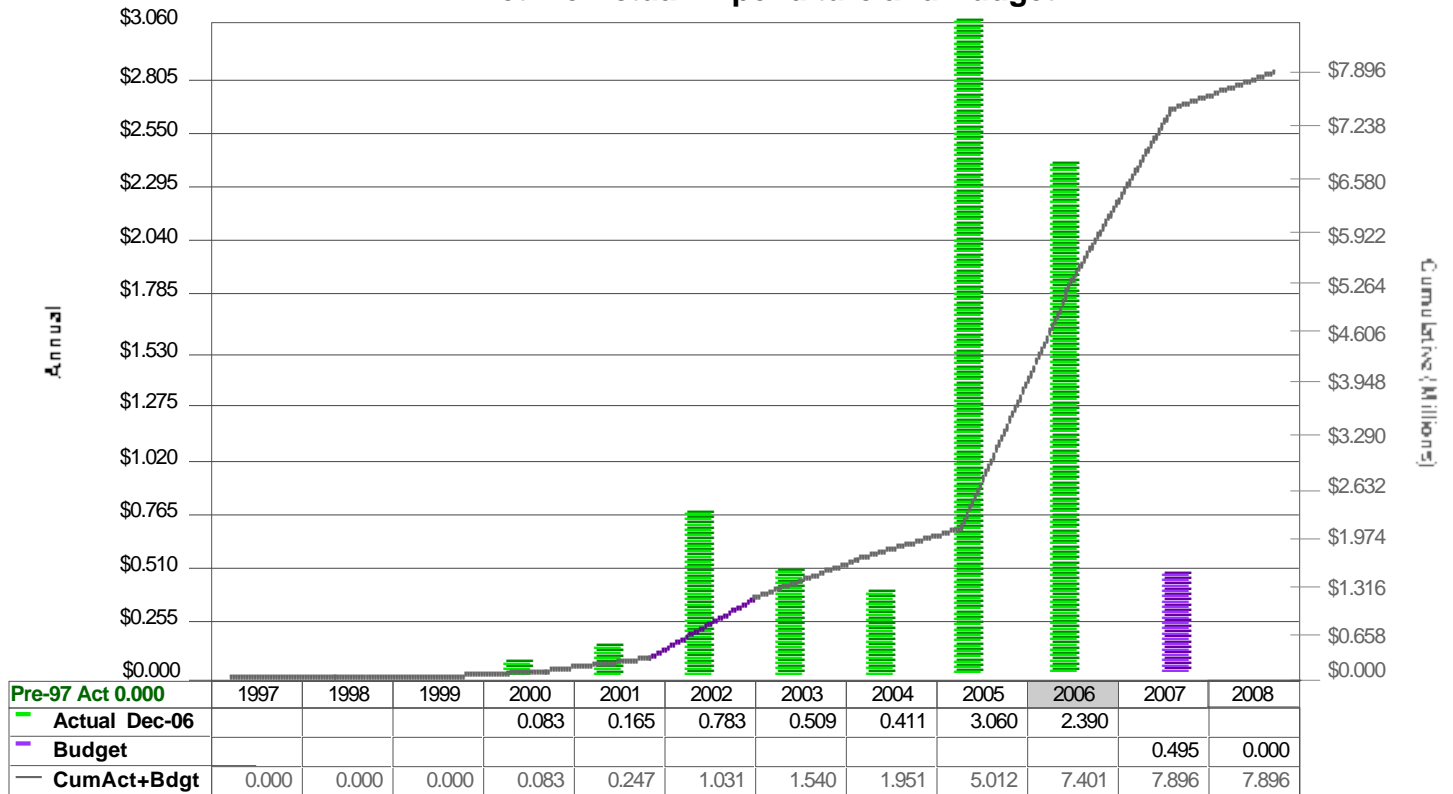
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423297 RWSP Local System I/I Control



Project Description

The Executive's Regional Infiltration/Inflow Control Program was approved by County Council in May 2006. The first step is to implement 2 to 3 initial I/I reduction projects between 2007 and 2012. These projects will test the County's ability to cost-effectively reduce I/I within project basins to a point where planned more expensive conveyance system improvement projects will not be needed. In 2007, sewer system evaluation survey (SSES) work will be conducted on four potential project sites. SSES work includes CCTV inspection, smoke testing, manhole inspections and dye testing. Pre-design work on the four project sites will be initiated and completed between July 2007 and September 2008. At the end of pre-design work, the 2 to 3 most feasible projects will be selected for design and construction. The design phase will occur between October 2008 and September 2009. Construction will occur between February 2010 and October 2011. Post project flow monitoring and analysis will be conducted between November 2011 and August 2012. A final report of findings and recommendations for continued implementation of the Regional I/I Control Program will be presented to the King County Executive and King County Council in the 4th quarter of 2012.

Project Phase: 1 Planning

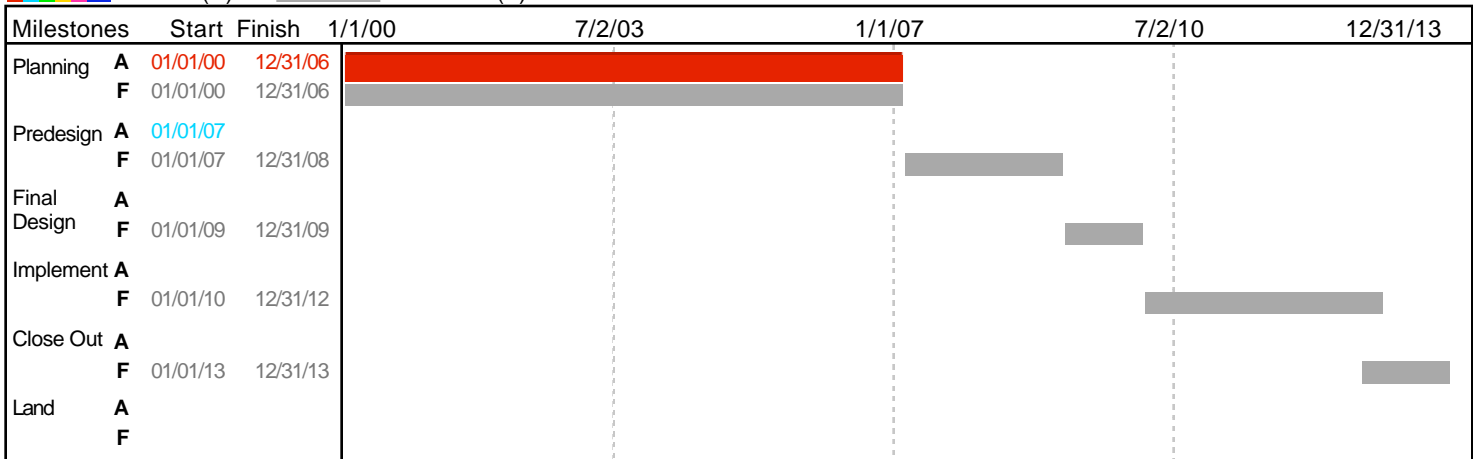


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule


 Actual (A) Forecast (F)



Schedule Adjustments

None

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	974	0	0	5,455,999	5,452,305	38,754,179
Construction Contracts	0	0	0	5,419,822	5,417,102	38,718,976
Owner Furnished Equipment	974	0	0	27,046	26,073	26,073
Other Capital Charges	0	0	0	9,131	9,131	9,131
NON-CONSTRUCTION	596,126	1,738,536	1,404,916	33,195,837	39,634,207	46,046,836
Engineering	211,311	800,000	900,000	25,327,596	28,525,776	34,312,049
Planning & Management Svcs.	0	0	0	45,533	45,533	45,533
Permitting & Other Agency Support	0	0	0	1,865,036	1,865,036	1,865,036
Misc. Services & Materials	30,686	27,604	27,604	621,605	681,183	802,295
Staff Labor	354,129	910,932	477,312	5,336,067	8,516,679	9,021,923
CREDITS AND REVENUES	0	0	0	-2	0	0
Credits and Revenues	0	0	0	-2	0	0
Total \$	597,100	1,738,536	1,404,916	38,651,835	45,086,512	84,801,016

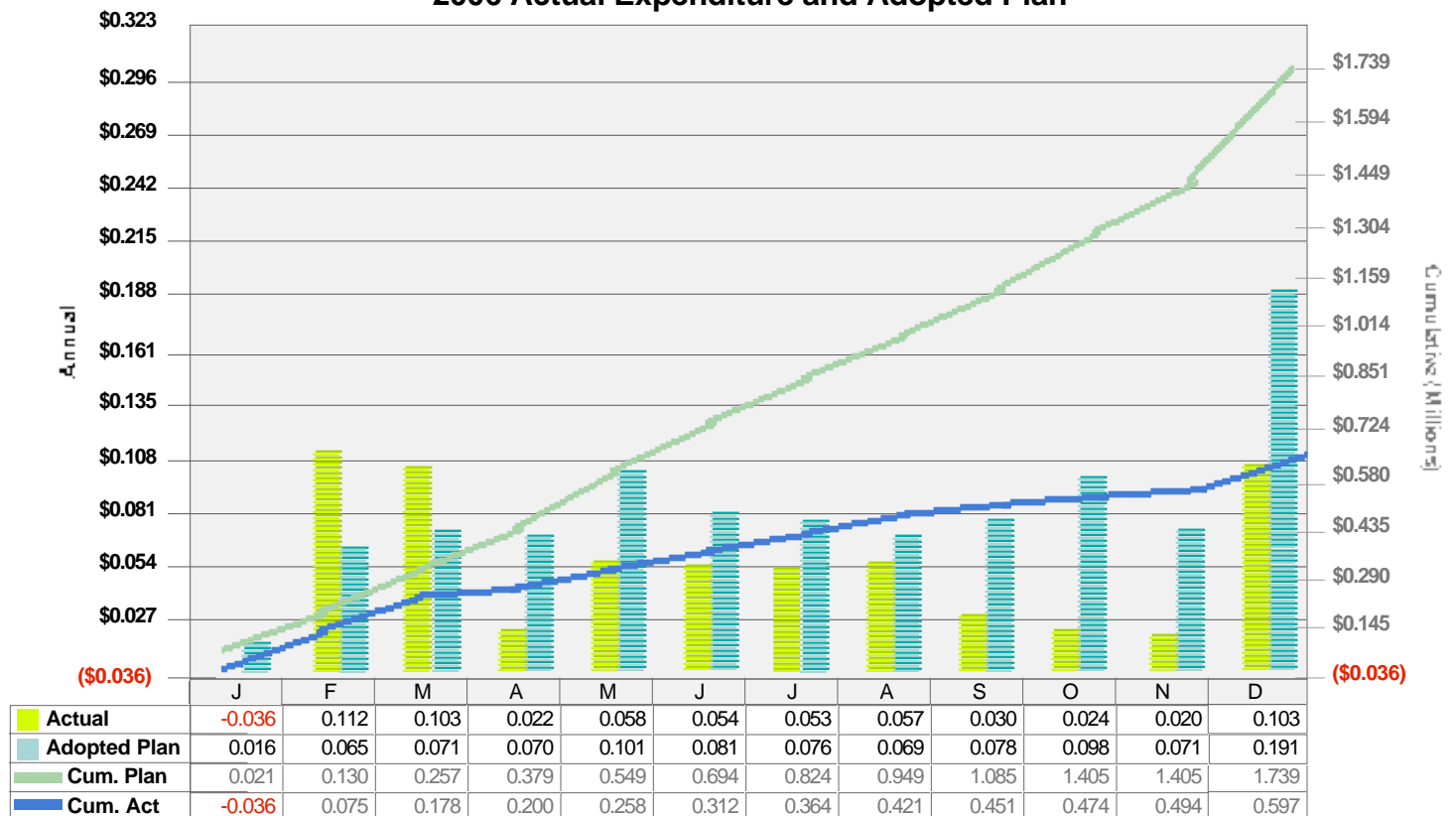
Cost/Budget Adjustments - Note: The costs of design and construction of the I/I initial reductions projects are capped at \$25 million. Although the cost summary reflects the budget for these projects; the projects are being funded from the Conveyance System Improvement program, as the purpose of the project is to carry out I/I control in lieu of investing in larger conveyance system improvements when it is cost-effective to do so. It is expected that the lifetime budget will be less than shown on this summary. In addition, the results of the I/I initial projects will be a factor in future I/I control expenditures. The RWSP 2006 cost estimate sheet shows an additional cost of \$4 million through 2012 to cover flow monitoring costs associated with the initial projects, ongoing modeling, analysis, reporting, and other costs in support of the I/I program.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
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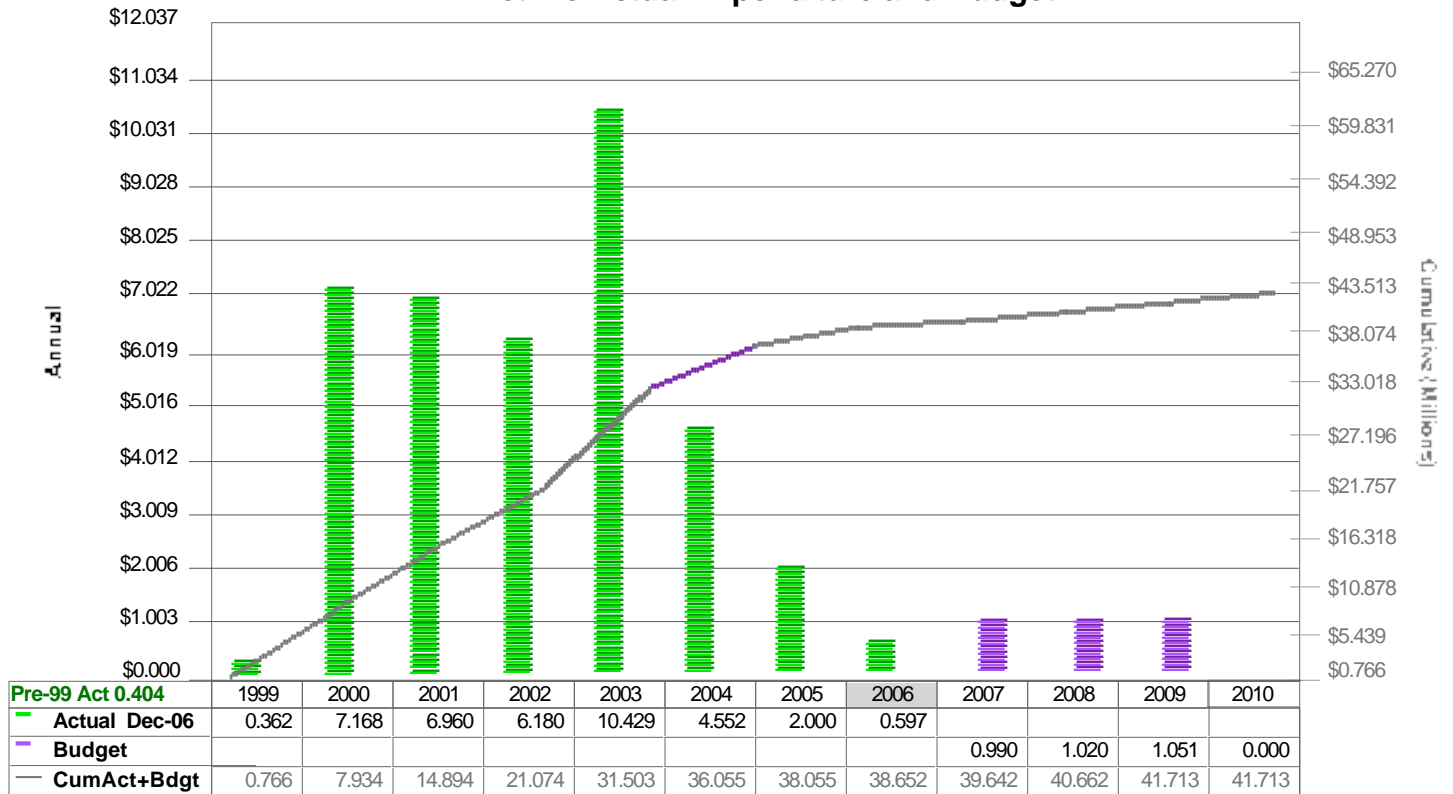
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423368 Sediment Managment Plan



Project Description

Sediment Management Program addresses sediment contamination cleanups required under federal CERCLA and state MTCA regulations. The SMP objectives are to repair potential environmental damage in a timely, efficient and economical process, to prevent harm to public health, and to limit future liability.

Project Phase: 1 Planning

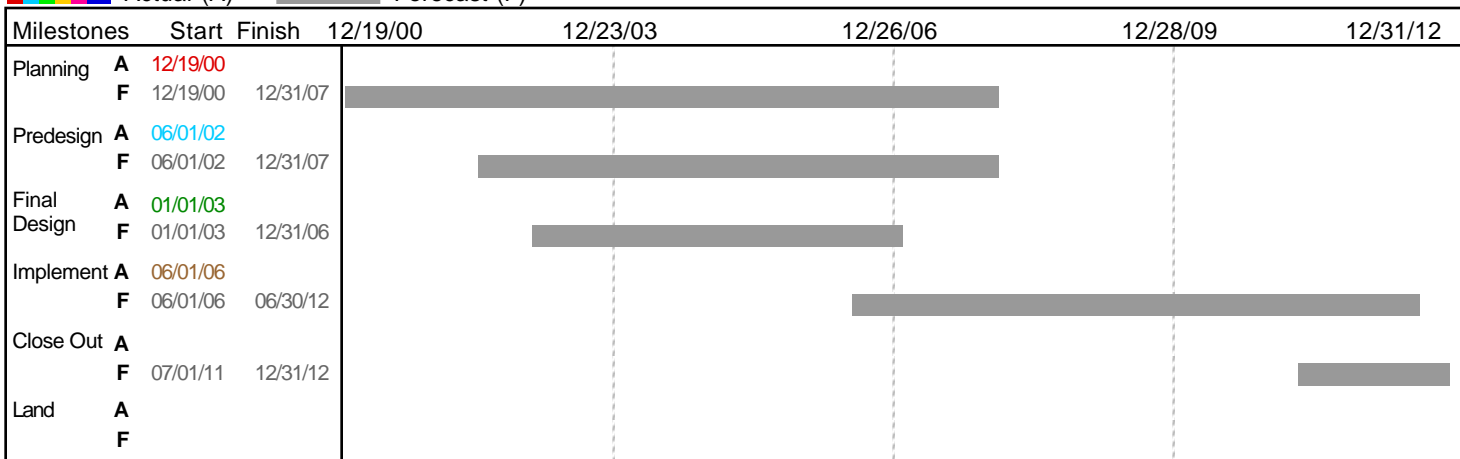


King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

Actual (A) Forecast (F)



Schedule Adjustments

- Portion of construction costs for start of Denny will be delayed into the 2007-8 dredging window as Ecology has not assigned a site manager.
- Portion of construction costs are for a share of Hanford/Lander costs that the Port of Seattle incurred during a navigation dredging in 2004-5. MOA signed with the Port and Seattle will likely move allocation process into 2007 so no construction money will be dispersed until at least 2007.

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	0	3,276,224	0	5,412	27,746,401	30,995,230
Construction Contracts	0	3,276,224	0	0	27,740,989	30,972,014
Owner Furnished Equipment	0	0	0	5,412	5,412	5,412
Other Capital Charges	0	0	0	0	0	17,805
NON-CONSTRUCTION	524,349	1,563,483	1,420,177	5,742,576	12,048,394	12,951,500
Engineering	176,315	927,000	815,109	1,371,811	4,116,593	4,460,353
Planning & Management Svcs.	0	0	0	360,702	347,063	360,702
Permitting & Other Agency Support	12	51,500	0	96,046	419,455	377,657
Misc. Services & Materials	63,132	62,830	31,415	1,652,734	1,823,802	1,775,002
Staff Labor	284,890	522,153	573,653	2,261,282	5,341,482	5,977,786
CREDITS AND REVENUES	-150,639	-1,228,891	0	-150,639	26,550	0
Credits and Revenues	-150,639	-1,228,891	0	-150,639	26,550	0
Total \$	373,711	3,610,817	1,420,177	5,597,349	39,821,345	43,946,731

Cost/Budget Adjustments

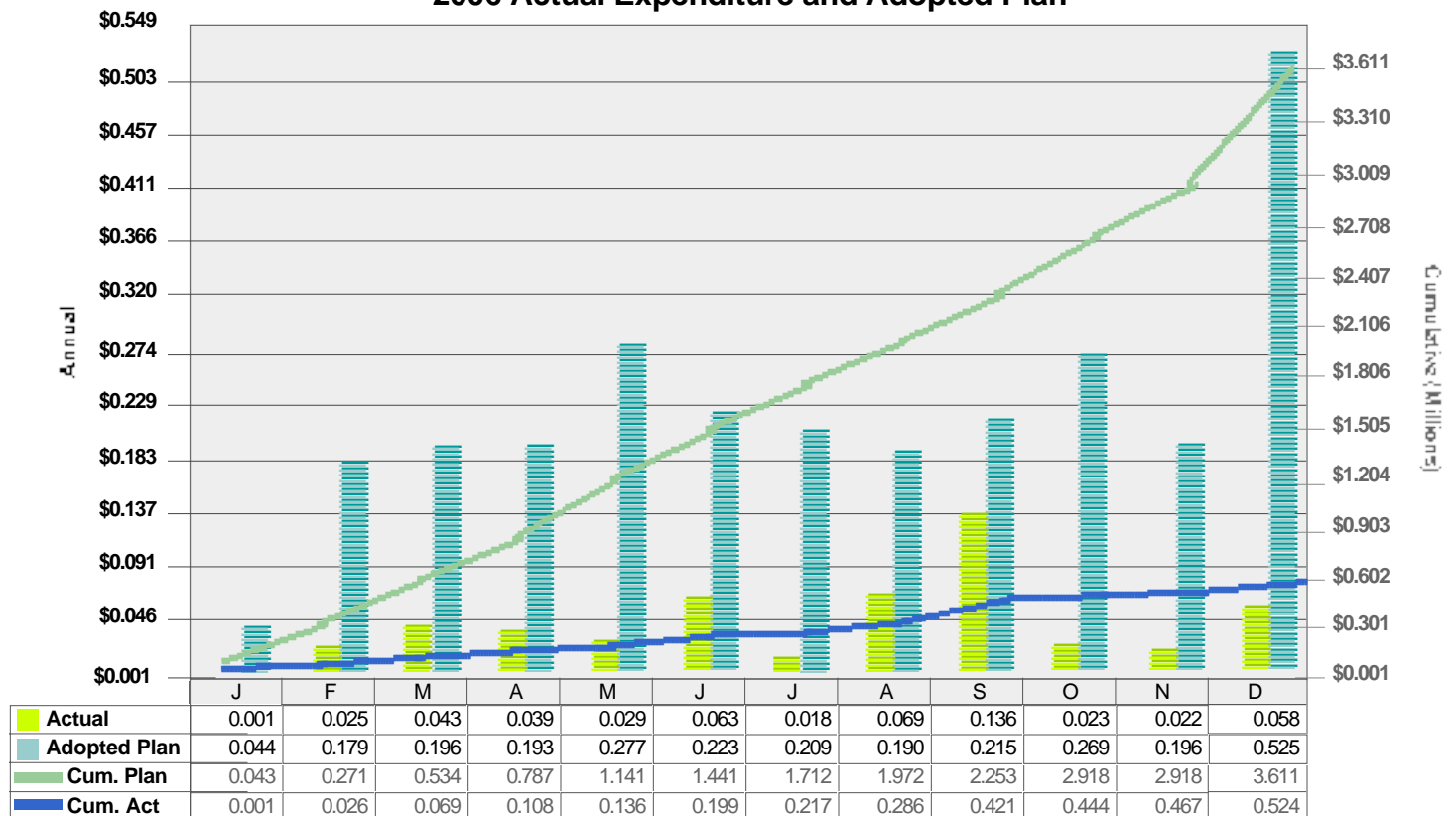
- Construction costs projected in 2006 are delayed into 2007 for Denny
- Construction costs for Hanford/Lander are delayed into future years due to negotiations with Port of Seattle and City of Seattle to conduct joint work on East Waterway. Allocation process will determine cost shares and timing of payments.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
Sediment Management	\$526,052	\$0	\$526,052	\$0	0%	1	\$526,052	\$378,622	46	72%
Phase 2/Discharge Modeling for Contaminated Sediment	\$266,664	\$0	\$266,664	\$0	0%		\$266,664	\$257,518	8	97%
Discharge Modeling for Contaminated Sediment	\$53,692	\$0	\$53,692	\$10,136	19%	1	\$63,828	\$63,383	12	99%

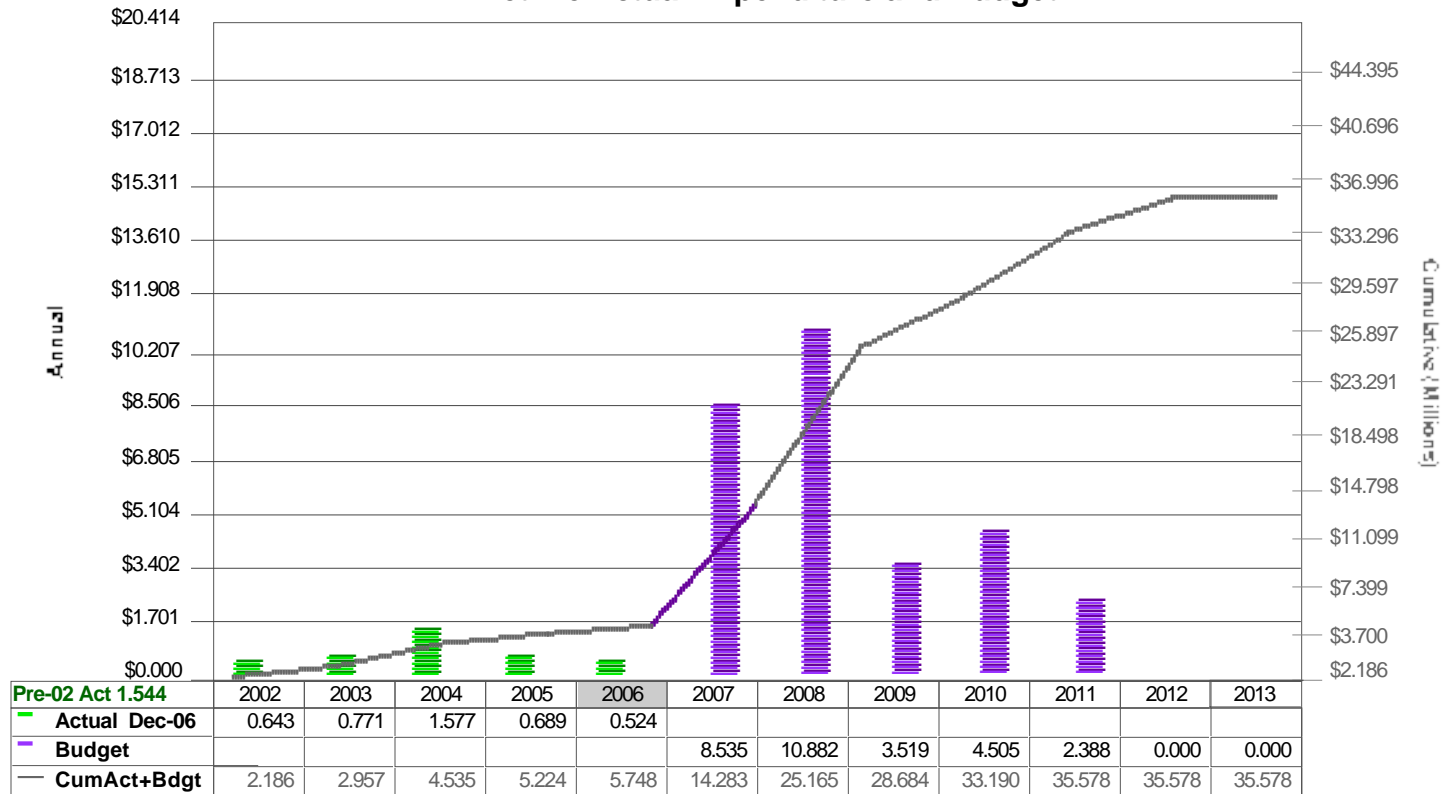
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

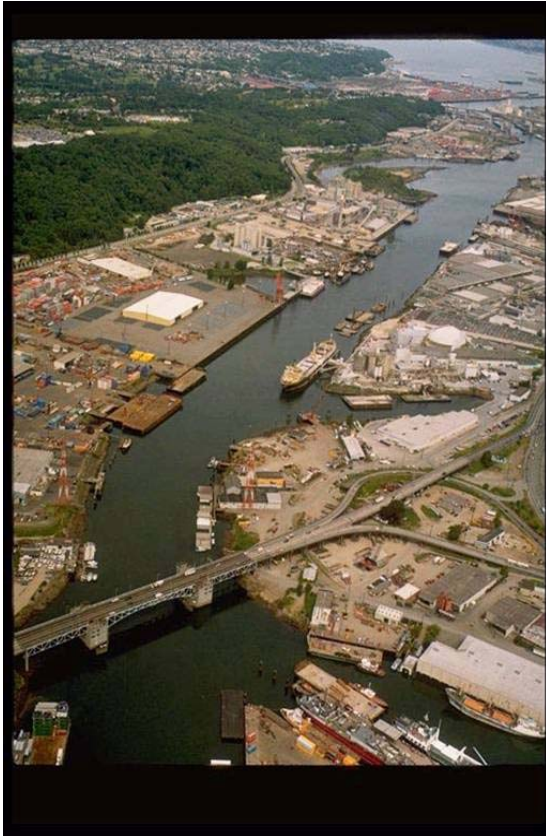
Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423589 Lower Duwamish Waterway Superfund



Project Description

The project implements the County's shared responsibilities under a signed Administrative Order on Consent (AOC) to conduct a Remedial Investigation/Feasibility Study (RII/FS) for the Lower Duwamish Waterway Superfund Site, conduct source control along the waterway, and pay for EPA and Ecology oversight costs.

Project Phase: 1 Planning



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Actual (A) Forecast (F)

Milestones	Start	Finish	1/1/05	3/18/06	6/2/07	8/16/08	10/31/09
Planning	A	01/01/05					
	F	01/01/05	10/31/09				
Pre-design	A						
	F	10/31/09	10/31/09				
Final Design	A						
	F	10/31/09	10/31/09				
Implement	A						
	F	10/31/09	10/31/09				
Close Out	A						
	F	10/31/09	10/31/09				
Land	A						
	F						

none

Cost Summary	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
Expenses						
NON-CONSTRUCTION	2,429,184	1,461,319	2,035,038	3,978,165	4,980,416	5,857,690
Engineering	483,045	946,556	1,426,538	494,360	3,006,824	2,738,946
Planning & Management Svcs.	364,942	0	0	365,930	0	988
Permitting & Other Agency Support	120	0	0	120	0	0
Misc. Services & Materials	907,767	0	0	1,978,282	0	1,070,515
Staff Labor	673,309	514,763	608,500	1,139,473	1,973,592	2,047,241
CREDITS AND REVENUES	-1,121,827	0	0	-1,121,827	0	0
Credits and Revenues	-1,121,827	0	0	-1,121,827	0	0
Total \$	1,307,356	1,461,319	2,035,038	2,856,338	4,980,416	5,857,690

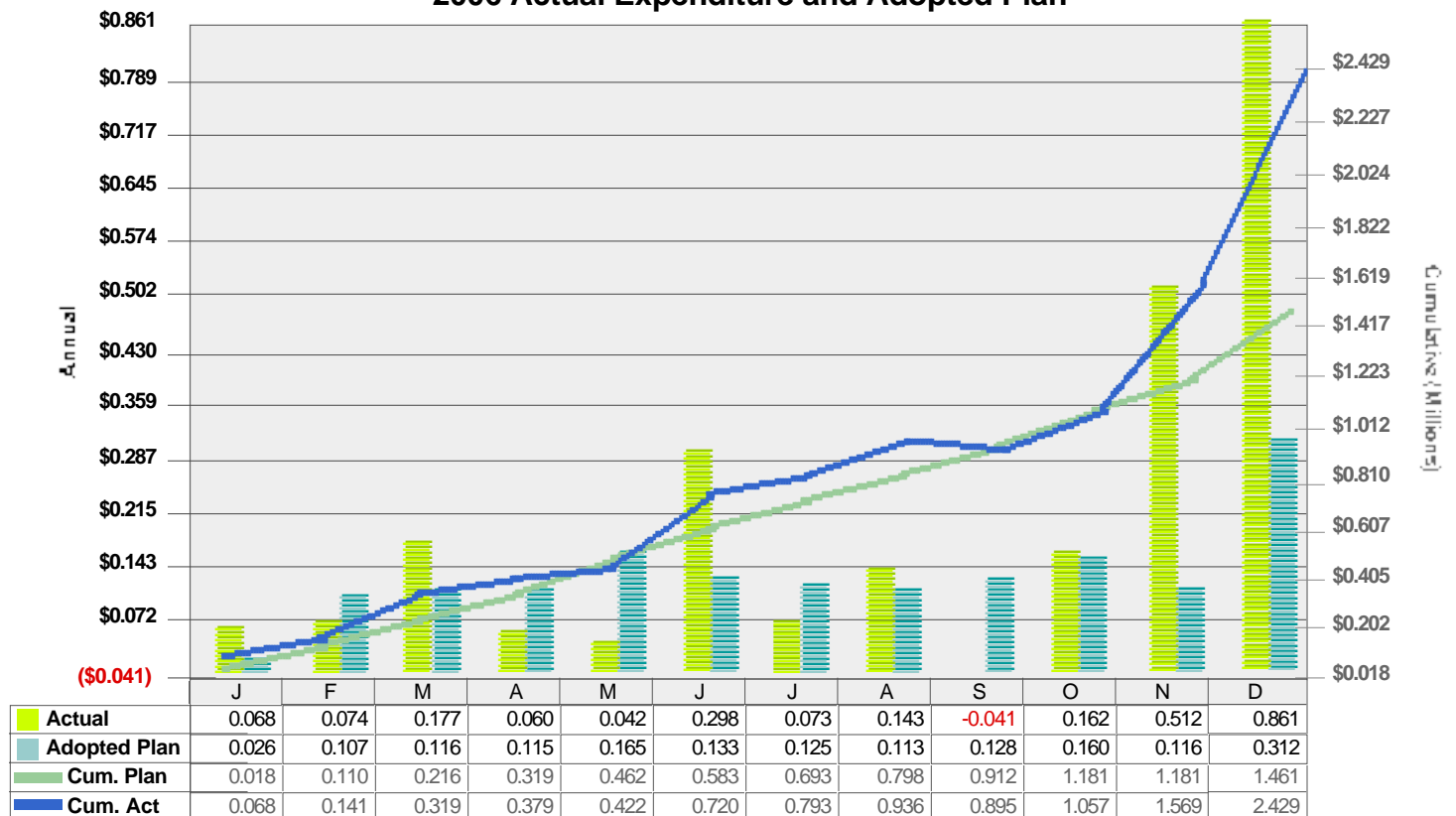
Total Project costs are projected to increase to \$5.8 million due to increased effort for all sampling conducted to date and expected increased costs in developing and gaining EPA approval of final deliverables.

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
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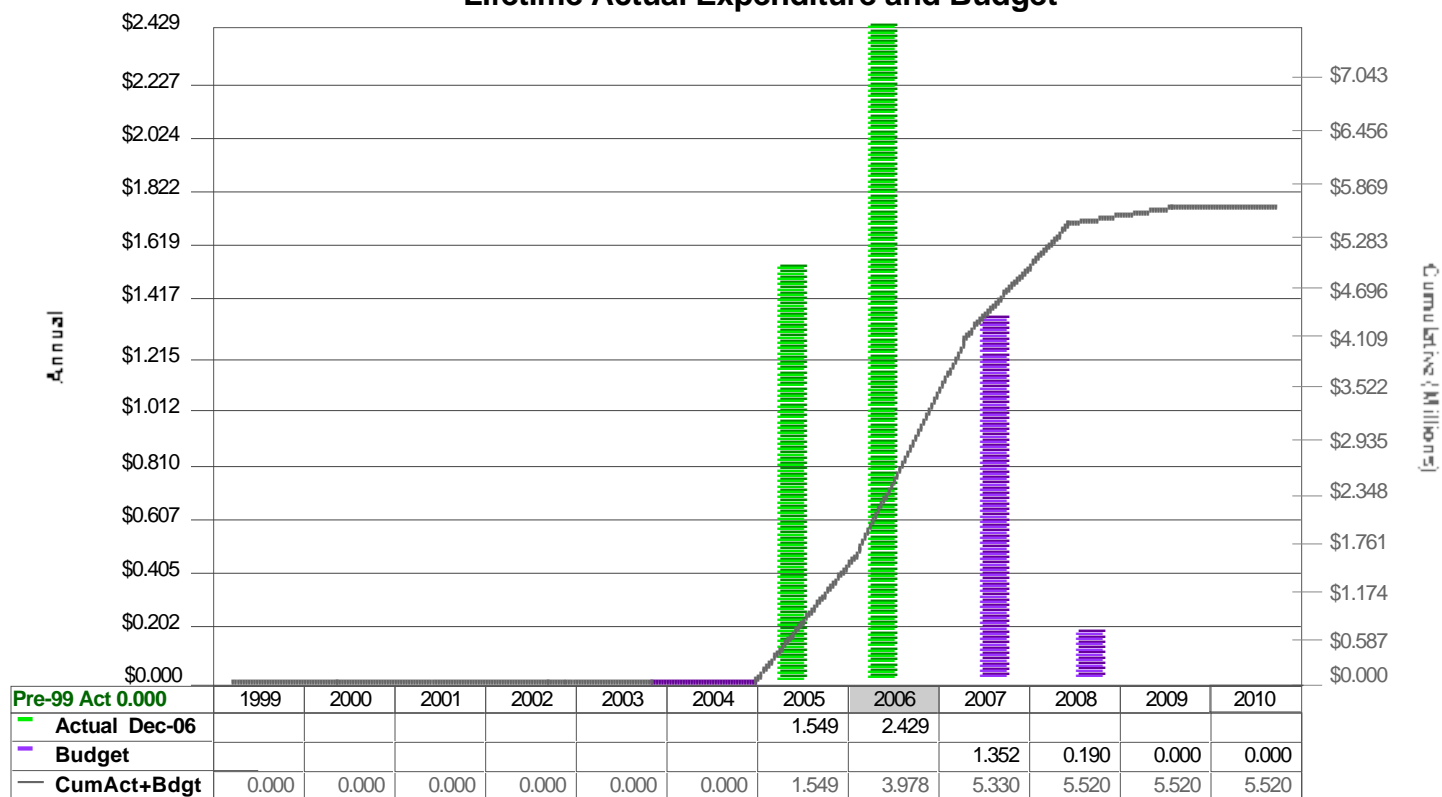
Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget



RWSP Project Report

DECEMBER 2006

423593 WP Digestion Improvements



Project Description

Design and implement improvements to the West Point Treatment Plant solids digestion system to improve system reliability. Improvements will include modifications to the blending storage tank (Digester 6) to enable its use as an emergency active digester, modifications to solids conveyance systems to enable continuous digester feed and withdrawal and installation of new mixing system for Digesters 4 and 5.

Project Phase: 1 Planning








King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Milestone Schedule

 Actual (A)
  Forecast (F)

Milestones	Start	Finish	1/2/05	5/26/06	10/17/07	3/9/09	7/31/10
Planning	A 01/02/05	06/19/06					
	F 06/19/06	06/19/06					
Predesign	A 06/19/06						
	F 06/19/06	03/31/07					
Final Design	A						
	F 03/31/07	07/24/07					
Implement	A						
	F 07/24/07	12/09/08					
Close Out	A						
	F 12/09/08	07/31/10					
Land	A						
	F						

Schedule Adjustments

Cost Summary

Expenses	2006 Actual Expenditure and Plan			Lifetime Actual Expenditure and Budget		
	IBIS YTD Dec-06	Adopted Plan	Updated Plan	IBIS LTD Dec-06	Lifetime Budget	Updated Budget
CONSTRUCTION	0	76,606	0	0	2,374,607	3,476,374
Construction Contracts	0	76,606	0	0	2,342,303	3,444,069
Other Capital Charges	0	0	0	0	32,304	32,304
NON-CONSTRUCTION	194,427	508,106	589,291	282,716	1,281,573	1,478,758
Engineering	69,659	270,375	434,211	69,659	629,678	906,268
Permitting & Other Agency Support	0	22,071	22,071	0	25,643	22,071
Misc. Services & Materials	9,844	11,330	14,399	16,015	46,020	50,676
Staff Labor	114,925	204,329	118,610	197,043	580,233	499,743
PROJECT RESERVE	0	0	0	0	747,480	1,187,403
Project Reserve	0	0	0	0	747,480	1,187,403
CREDITS AND REVENUES	0	0	0	0	22,613	0
Credits and Revenues	0	0	0	0	22,613	0
Total \$	194,427	584,712	589,291	282,716	4,426,273	6,142,534

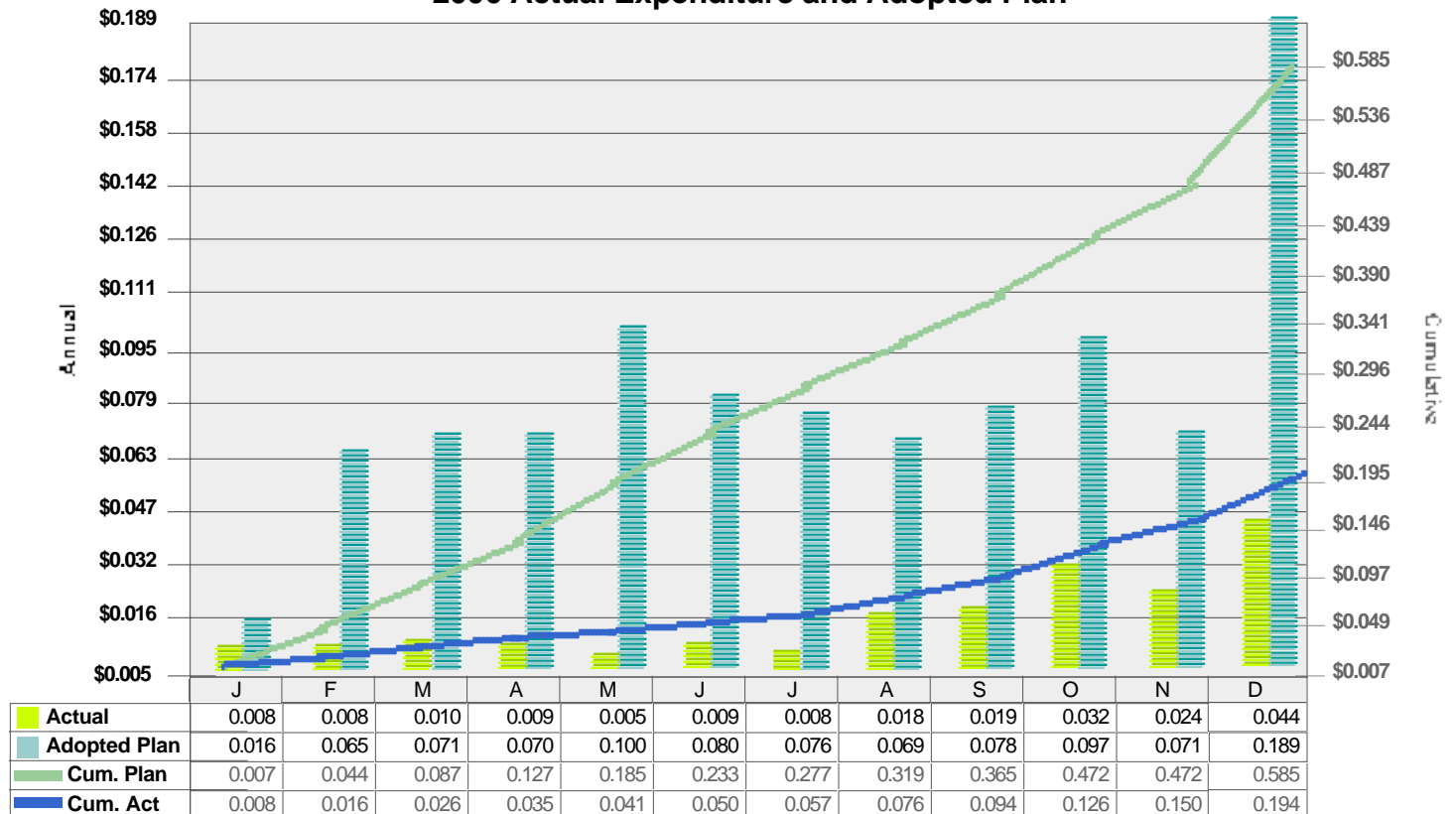
Cost/Budget Adjustments

Contract Status

Contract	Original Contract Amount	Phased Amends	Base Contract Amount	Change Amends or COs	Change Percentage	Nbr of Amends/CO's to Date	Current Contract Amount	Amount Paid	Thru Pmt No.	% Paid
West Point Treatment Plant Digestion System	\$382,148	\$0	\$382,148	\$0	0%		\$382,148	\$89,394	7	23%
E53025E										

Annual Cash Flow

2006 Actual Expenditure and Adopted Plan



Lifetime Cash Flow

Lifetime Actual Expenditure and Budget

